Alison Blenkinsopp • Martin Duerden • John Blenkinsopp

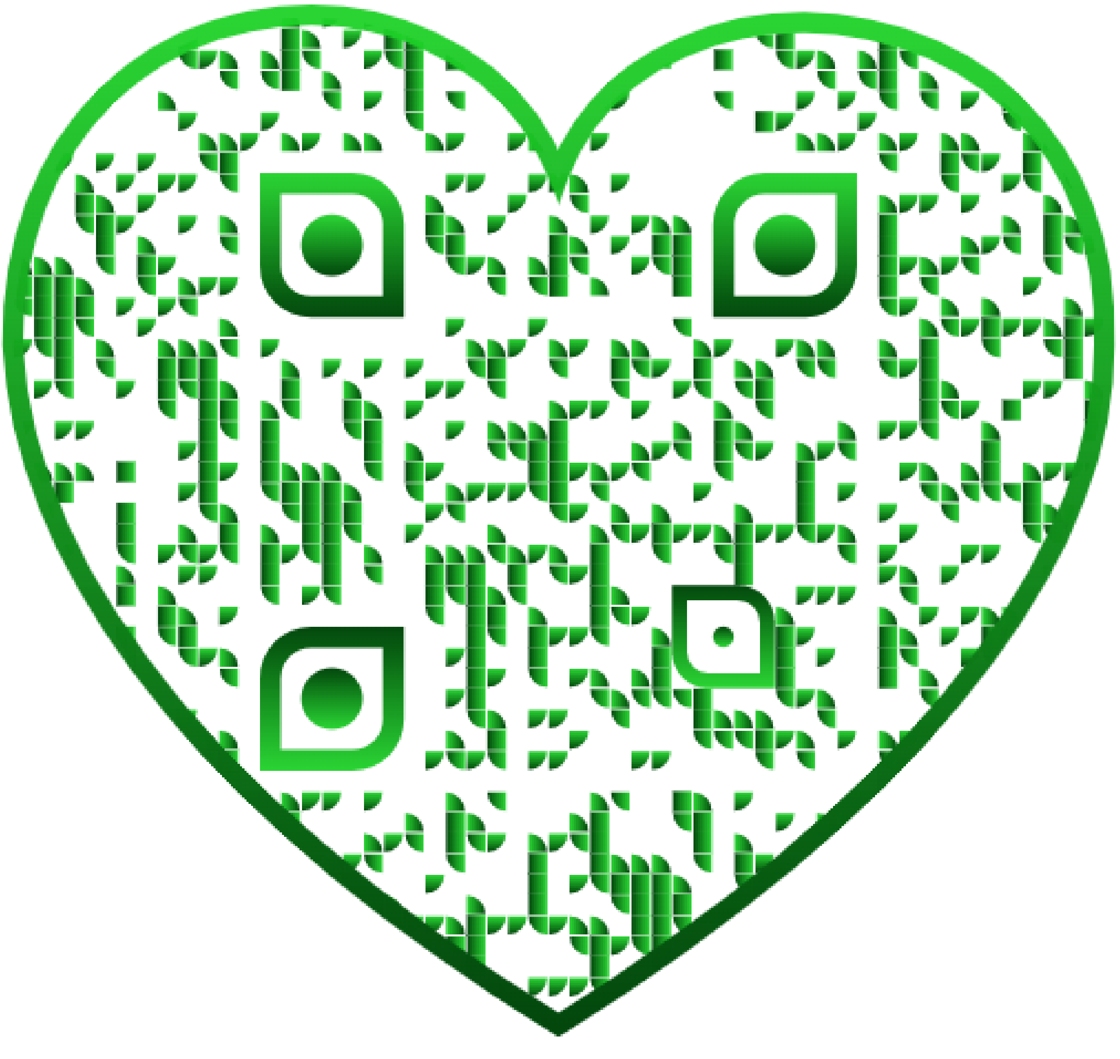
Symptoms in the Pharmacy

A Guide to the Management of Common Illnesses

Ninth Edition

with online self test

WILEY Blackwell



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A Guide to the Management of Common Illnesses

NINTH EDITION

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Preface

This is the ninth edition of our book and comes at an exciting time with continued and increasing emphasis on community pharmacists' clinical role as first point of contact in primary care. In the 30 years since the first edition was published, our book has been translated into five languages and has sold over 60,000 copies all over the world.

In this new substantially updated edition, we:

- Incorporate information about *COVID-19 and Long COVID* in a new chapter.
- Add new sections in the *Women's Health* chapter, incorporating additional information about prescription-only medicine (POM) to pharmacy (P) medicine changes for the contraceptive *desogestrel*, and review the assessment of the *Menopause* and *Incontinence*.
- Refresh the Introduction with consideration of:
  - Remote consultations by telephone and video.
  - Implications of increased online purchasing of over-the-counter (OTC) medicines.
  - An update on how community pharmacy teams fit within a changing National Health Service (NHS) landscape as a source of first-contact care.
- Introduce a new chapter on *Older People, Frailty and Falls Prevention*.
- Add a new chapter on *Pharmacogenomics* and implications for the pharmacist.
- Integrate the previous chapter on *Insomnia* into a new one on *Insomnia and Mental Well-Being*.
- Add more accounts by patients to our case studies and also responses from nurse practitioners to reflect their input in primary care.

In addition, we:

- Enhance the readability with more illustration, diagrams and pictures.
- Continue our explicit emphasis on the evidence base for 'OTC' medicines and explain the book's approach and evidence sources.

- Provide a visual display at the end of each chapter of the guidelines, systematic reviews and other reliable sources of information used to update the book.

Some of the topics in this book are aligned to educational modules developed by the authors for Pharmacy Magazine. As for previous editions, we have sought and received feedback and suggestions from pharmacists (undergraduate students, pre-registration trainees and practising pharmacists). We thank all the pharmacists who sent us suggestions and we hope you like the new edition. We express special thanks to community pharmacists Lindsey Fairbrother, Abel Kubare, Luso Kumewenda and Babir Malik, as well as to our formal reviewer for their detailed comments and suggestions.

Alison Blenkinsopp
Martin Duerden
John Blenkinsopp

Introduction and How to Use This Book

Community pharmacies are becoming increasingly important in the United Kingdom (UK) National Health Service (NHS) in providing assessment and advice about minor ailments and symptoms. Pharmacy teams are used to encouraging self-care and have become ever more widely used as a first port of call for minor illness, as well as for referrals by other health professionals. Pharmacists are responsible for ensuring that their staff provide appropriate advice and recommendations.

UK government policy has enabled pharmacists to have a greater role in the direct supply and supervision of medicines and some of this is achieved through license reclassification. There are three main categories for medicines which hold a licence authorised by the Medicines and Healthcare products Regulatory Agency (MHRA). Those that can be prescribed by a doctor, or by non-medical prescribers, are ‘prescription only medicines’ (POMs). After some years of use, if there is enough evidence to support their safe use without a prescriber’s supervision a medicine may be reclassified by the MHRA to make it available for sale from pharmacies under the supervision of a pharmacist. These ‘pharmacy medicines’ (P) are not usually ‘on display’ on open pharmacy shelves. P medicines which have been safely used for several years may be further reclassified to ‘general sales list’ (GSL) medicines where they can be bought from pharmacies and other retail outlets, such as supermarkets and convenience stores and can be selected by patients from open shelves. Where the distinction between POM, P and GSL is particularly important this is indicated in this book.

Since the last edition of this book there have been several important changes in health policy, and events, which have strengthened the part played by community pharmacies in the assessment and management of common conditions. One change is that the coronavirus disease (COVID-19) pandemic has accelerated the adoption of remote consultations with pharmacists by telephone and video, which has enhanced the role of and increased access to community pharmacies. There has also been greater digital integration of community pharmacy with the wider NHS which has enabled electronic referrals from general practitioners (GPs) in primary care and from NHS telephone triage services.

In this book, we recognise that members of the public present to pharmacists and their staff in a number of different ways and pharmacists require a mix of knowledge and skills in diseases and their treatment, as well as excellent consultation skills.

Types of presentation	Pharmacist portfolio of key skills
Asking to purchase a named medicine	Differentiation between minor and more serious symptoms
Requesting advice about symptoms and appropriate treatment in person or remotely	Listening skills
	Questioning skills
Requesting advice about minor injuries	Triage of minor injuries, first aid
Requiring general health advice (e.g. about dietary supplements)	Treatment choices based on evidence of effectiveness
Asking about effects/symptoms perceived to relate to prescribed medicines	Explaining skills
	Partnership working with patients
	Acting as a role model and training other pharmacy staff
A digital referral by NHS 111 or a healthcare professional	

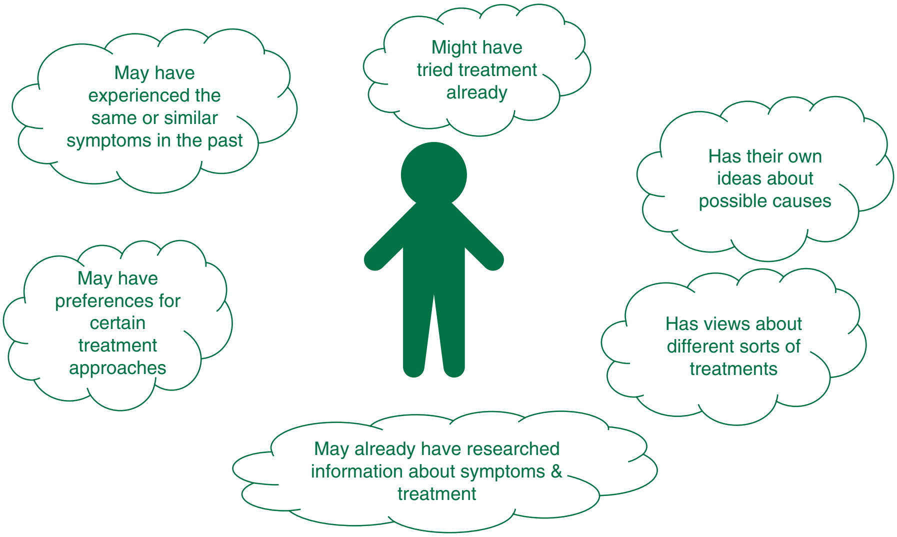
This introduction to the book has six sections:

1. Working in partnership with patients
2. Working in partnership with other health professionals
3. The consultation and developing consultation skills
4. Effectiveness of treatments and how we have used reference sources in this book
5. Layout of the chapters in this book.
6. The future

These set out the current context for community pharmacists' response to symptoms, a concise guide to pharmacy consultation skills, a summary of how we compiled evidence about treatment effectiveness and some comments on likely future developments. Throughout, we suggest how the reader might use this book and we then explain the layout of the chapters that follow.

WORKING IN PARTNERSHIP WITH PATIENTS

We refer to people seeking advice about symptoms as patients, although recognising that many will in fact be healthy people. We do this because we feel that the terms ‘customer’ and ‘client’ do not capture the nature of pharmacy consultations about health. In the past, pharmacists were seen as experts and patients as beneficiaries of pharmacists’ information and advice. However, patients are not blank sheets or empty vessels; they have choices to make and are experts by experience in their own and their children’s health. The following diagram illustrates some of the thoughts a patient may be having about their symptoms.


May have experienced the same or similar symptoms in the past
Might have tried treatment already
Has their own ideas about possible causes
May have preferences for certain treatment approaches
Has views about different sorts of treatments
May already have researched information about symptoms & treatment

The pharmacist needs to take these factors into account during the consultation and enable patient participation by actively eliciting the patient’s views and preferences. Many, but not all, patients will want to engage in decision-making about how to manage their symptoms. Some will want the pharmacist to decide on their behalf. The pharmacist needs to find out what the patient knows and wants. Finding out the information source(s) used by the patient is important, and if the reliability of the information is poor, this may need to be pointed out.

Healthcare professionals can only truly learn how to work in partnership by listening to what patients have to say. The list provided in the following section comes from a study of laypeople’s ‘tips’ on how consultations could be more successful. Although the study was concerned with medical consultations, many of the tips are equally relevant to pharmacists’ response to patients’ symptoms.

How to make a consultation more successful from the patient's perspective: tips from laypeople

- Introduce yourself with unknown patients.
- Keep eye contact.
- Take your time; do not show your hurry.
- Avoid prejudice – keep an open mind.
- Treat patients as human beings and not as a bundle of symptoms.
- Pay attention to psychosocial issues.
- Take the patient seriously.
- Listen – do not interrupt the patient.
- Show compassion; be empathic.
- Be honest without being rude.
- Avoid jargon; check if the patient understands.
- Avoid interruptions.
- Offer sources of trusted further information (leaflets, weblinks, etc.).

Source: Reproduced from Bensing *et al.* (2011).

Reading and listening to patients' accounts of their experience can provide valuable insights. Websites and blogs can give a window into common problems and questions, can help to see the patient perspective, and can also show how powerful social media can be in sharing experience and information; examples are *Patient Community Forums* at `https://patient.info/forums` and *netmums* at `www.netmums.com`. These lay networks can be very valuable, and pharmacists can contribute with their own expertise.

Some information from online sources or social media can be inaccurate or of poor quality, and some can create unrealistic beliefs and expectations. Others may be overtly or covertly promotional. Sometimes, information relates to medicines in different countries. A different issue is deliberate misinformation about health and treatments, and this has come to the fore during the COVID-19 pandemic. If you are concerned about the quality or relevance of health information that has been accessed by a patient, you can tactfully point them towards accredited sources of information, such as that provided on the *NHS Health* and *NHS Medicines* joint website (`www.nhs.uk`).

Pharmacists observe from their own experience that some patients are content to discuss even potentially sensitive subjects at the pharmacy counter. Sometimes, this 'public disclosure' may seem inappropriate and potentially embarrassing for other customers. While this is true for some people, others are put off asking for advice if they perceive insufficient privacy. The vast majority of UK community pharmacies have a consultation room or area. Research shows that most pharmacy customers feel that the level of privacy available for a pharmacy consultation is now acceptable. There is some evidence of a gap between patients' and pharmacists' perceptions of privacy.

Pharmacists should always bear privacy in mind and seek to create an atmosphere of confidentiality if sensitive problems are to be discussed, even if the patient does not seem concerned. Using professional judgement and personal experience, the pharmacist can look for signs of hesitancy or embarrassment on the patient's part, or identify inappropriate openness, and can suggest moving to a quieter part of the pharmacy or to the consultation area to continue the conversation. Proactively inviting a patient to the consultation area in response to a request about a sensitive topic, such as contraception, is appreciated by many.

Patients often assume that their community pharmacist and GP are both aware of the advice and treatments that each has prescribed or supplied and research shows that patients are keen for the health professionals providing their care to work together.

WORKING IN PARTNERSHIP WITH OTHER HEALTH PROFESSIONAL COLLEAGUES

Primary care

Community pharmacists are a key gateway into the formal NHS through their filtering of symptoms, with referral to the GP practice or dentist surgery, the optometrist, the out-of-hours (OOH) service or the accident and emergency (A&E) department when necessary. This filtering is more correctly termed as triaging and is increasingly important in maximising the skills and input of pharmacists and nurses. The NHS has introduced several policy changes to increase the involvement of pharmacists, optometrists and nurses in managing minor conditions in order to maximise GP time available for more serious and complex illness. The case studies in this book are included to illustrate the interactions between community pharmacists and other health professionals working in primary care.

Community pharmacists work closely with local GP practices and local healthcare organisations, enabled by the increasing digital integration that is enhancing communication and facilitating structured messaging and referral channels. Arrangements differ among UK countries and may involve GPs electronically referring patients for a community pharmacy minor illness consultation. Locally commissioned NHS minor ailment schemes, including the supply of medicines, exist in some areas, as do Patient Group Directions (PGDs) where certain medicines that are usually POMs can be supplied (see later in this chapter). Scotland has had a national service with electronic referral and records for several years.

GPs in England are dissuaded from prescribing over-the-counter (OTC) medicines to treat minor conditions and instead encourage patients to buy them. This is partly to reduce costs, but also to reduce pressure on GP services and increase the use of pharmacies. The role of community pharmacy in supporting this process is fundamental, as well as necessary for the policy to work. The current list of conditions for which OTC items should not routinely be prescribed in primary care in England is shown in Table A; we include it to illustrate how the NHS in one UK country intends to encourage shifting the management of these conditions away from the GP towards the community pharmacy.

This book covers almost all the conditions on the list plus others. The book is arranged as a series of chapters, with each covering a group of conditions,

TABLE A NHS England list of conditions for which OTC items should not routinely be prescribed in primary care (2018)

- Acne (mild)
- Athlete's foot
- Burns and scalds (mild)
- Cold sores of the lip (infrequent)
- Conjunctivitis
- Constipation (infrequent)
- Coughs, colds and nasal congestion
- Cradle cap
- Cystitis (mild)
- Dandruff
- Dental caries (prevention)
- Diarrhoea (adults)
- Dry eyes/sore tired eyes
- Dry skin (mild)
- Earwax
- Excessive sweating (hyperhidrosis)
- Haemorrhoids
- Hay fever/seasonal rhinitis (mild to moderate)
- Head lice
- Indigestion and heartburn
- Infantile colic
- Insect bites and stings
- Irritant dermatitis (mild)
- Migraine (infrequent)
- Mouth ulcers
- Nappy rash
- Oral thrush
- Painful conditions (e.g. aches and sprains, headache, period pain and back pain)
- Ringworm
- Sore throat (acute)
- Sunburn due to excessive sun exposure
- Teething
- Threadworms
- Toothache (mild)
- Travel sickness
- Warts and verrucae

e.g. *Gastrointestinal Tract Problems* or *Women's Health*. Within each chapter, there is a separate section for each condition.

To support joint working in the area of OTC medicines, as part of primary care, pharmacists might consider the following steps:

- Agreeing guidelines for referral with local family doctors, perhaps including feedback from the GP to the pharmacist on the outcome of the referral, if made (see later in this chapter). Two-way referrals with OOH centres are also helpful (i.e. from the OOH service to the pharmacy and from the pharmacy to the OOH service).
- Using the Patient Medication Record (PMR) to keep information on OTC recommendations to patients.
- Keeping local family doctors and nurses informed about POM to P medicine changes, both when a new medicine is switched and when a previous POM to P medicine is no longer marketed or has been switched back to POM.
- Using referral forms when recommending that a patient sees his/her doctor.
- Agreeing an OTC formulary with local GPs and practice nurses (or at local healthcare organisation level).
- Agreeing with local GPs the response to suspected adverse drug reactions.

Actions like these will help to improve communication, will increase GPs' and nurses' confidence in the contribution the pharmacist can make to patient care and will also support the pharmacist's integration into the primary care team. Patients will also appreciate this work and have greater confidence and understanding of pharmacists as part of their clinical support network.

Increasing access to medicines through POM to P switches

In recent years the increased number of POM to P changes is partly to encourage greater autonomy and choice by patients, with more rapid and convenient access to medicines, but also to enhance the role of pharmacists, and to take pressure off general practice. Widening the range of medicines available from pharmacies and extending the conditions that would otherwise have necessitated a general practice consultation meets both objectives.

Recent POM to P changes are highlighted in this book and include *desogestrel*, an oral contraceptive. At the time of writing vaginal oestrogen tablets are being considered for a POM to P reclassification so we have described their use in general terms rather than as a P drug (see the new Menopause section Chapter 6, Women's Health).

Some POM to P changes prove not be successful or commercially viable and the OTC product may be withdrawn. We have chosen to continue to describe some of these medicines in this edition as their future availability as P medicines may change: *tamsulosin* for lower urinary tract symptoms in men, and *tranexamic acid* for menorrhagia are examples. For some, such as *calcipotriol ointment*, there may not be a UK launch as an OTC product even though they have been granted P status.

Patient Group Directions

A Patient Group Direction (PGD) is a legal framework to allow the safe supply of a medicine for specific patients, and may include provision of medicines that would otherwise require a prescription (POMs). PGDs are widely used in the NHS and among the most commonly used are stop smoking services; the supply of emergency hormonal contraception; the provision of influenza vaccinations; and recently, COVID-19 vaccinations. Community pharmacists in many areas are commissioned to supply certain medicines using a PGD, involving pharmacists in the wider work of the NHS, although PGDs can also be used in private sector services. Pharmacies providing NHS or private PGDs are required to meet specific criteria for quality and safety of services. Such requirements usually include demonstration of competencies and the keeping of certain records. The following list shows the range of PGDs that might be seen in community pharmacies:

- Erectile dysfunction
- Antimalarials
- Influenza and hepatitis B vaccine
- Meningitis vaccine
- COVID-19 vaccine
- Stop smoking (varenicline)
- Hair loss (private supply)
- Emergency contraception
- Salbutamol inhalers (for repeat supply)
- Oral contraception
- Cystitis treatment *(trimethoprim)*
- Sore throat management
- Weight loss (*orlistat* 120 mg)
- Impetigo

Each individual PGD includes specific circumstances in which the patient might need to be referred and whether this is to the GP practice or the A&E department.

Urgent care

At the end of the book, in the Appendix, we provide a set of pointers for direct referral; this is mainly related to physical illnesses. Pharmacists are also often asked to offer advice about accidents and injuries, many of which are likely to be minor with no need for onward referral. Pharmacists need to be familiar with the risk assessment and treatment to make a decision about when and where referral is needed. By helping to triage minor injuries, pharmacies can help to reduce costs, avoid unnecessary consultations elsewhere in the NHS, and take some of the pressure off emergency services. They can also help support and educate patients in managing common injuries.

The types of injuries that would be classified as 'minor' and amenable to self-care or simple 'first aid' are:

- Cuts, grazes and bruising
- Wounds, including those that may need stitches
- Minor burns and scalds
- Foreign bodies in the eye, nose or ear
- Tetanus immunisation after an injury
- Minor eye problems
- Insect bites or other animal bites
- Minor head injuries where there has been no loss of consciousness or vomiting
- Minor injuries to the legs below the knee and to the arms below the elbow, where patients can bear the weight through their foot or move their fingers
- Minor nose bleeds

Referral to the A&E or minor injuries unit may need to be considered in certain circumstances. The following list provides general guidance on when a person might need to immediately go to A&E:

- There has been a serious head injury with loss of consciousness or heavy bleeding.
- The person is, or has been, unconscious or confused for whatever reason.
- There is a suspected broken bone or dislocation.
- The person is experiencing severe chest pain or is having trouble in breathing.
- The person is experiencing severe stomach ache that cannot be treated by OTC remedies.
- There is severe bleeding from any part of the body.

THE CONSULTATION AND DEVELOPING CONSULTATION SKILLS

Responding to a request for a named medicine

The person making the request might already be an expert user or may be a novice. We define the expert user as someone who has used the medicine before for the same or a similar condition and is familiar with it. While pharmacists and their staff need to ensure that the requested medicine is appropriate, they also need to bear in mind their previous knowledge and experience of the purchaser.

Although most pharmacy customers do not mind being asked questions about their medicine purchase, many of those who wish to buy a medicine they have used before would prefer not to be subjected to the same questions each time. There are two key points here: firstly, it can be helpful to briefly explain why questions are needed; and secondly, fewer questions are normally needed when customers request a named medicine that they have used before. A suggested sequence in response to a request for a named product might be:

- Ask whether the person has used the medicine before; if the answer is yes, consider if any further information is needed.
- Quickly check on whether other medicines are being taken.
- If the person has not used the medicine before, more questions will be needed. One option is to follow the sequence for responding to requests for advice about symptoms (see the following text). It can be useful to ask how the person came to request this particular medicine. For example, have they seen an advertisement for it? Has it been recommended by a friend or family member?

Pharmacists use their professional judgement in dealing with regular customers whom they already know and where the individual's medication history is known, with the pharmacy PMRs as a source of backup information. However, for new customers where such information is not known, more questions are likely to be needed.

With more patients being referred to the pharmacy from GPs and NHS 111, or from elsewhere, and the NHS discouraging the prescribing of some OTC medicines, patients may ask for a named medicine that it has been recommended they buy. In some circumstances, it might be best or necessary that this is supplied on a GP prescription (for example, use is outwith the licence for pharmacy supply), and this needs to be handled carefully.

Responding to a request for help with symptoms

The request may be made in person by the patient or remotely by telephone or video call. The patient may have been referred to the pharmacy by NHS 111 or by a local healthcare professional. Requests may also be made by a customer on behalf of someone else. In this section, we set out the principles of responding to symptoms within a simple framework:

(A) Information gathering: By developing rapport, listening and questioning to obtain information about symptoms, and eliciting the patient's ideas.
(B) Decision-making: Is referral for a medical opinion required?
(C) Treatment and advice: The selection of possible, appropriate and effective treatments (when needed), offering options to the patient and advising on use of treatment, and offering health advice.
(D) Outcome: Advising the patient what action to take if the symptoms do not improve.

A. Information gathering

Most information required to make a decision and recommend treatment can be gleaned from just listening to the patient. Some patients will have been referred for a recommended treatment; others may want to repeat a previous treatment; and a few will have a new concern worrying them. In most cases, listening to the patient for a minute or two, rather than putting immediate questions, is usually the key to understanding their needs.

Patients with a new problem may have prepared a story to tell you and may be dissatisfied if the story is not heard; experience suggests that the story can give you much of the information you might need. Once the story has been told, additional, more focused information may be required. Start with open-type questions and perhaps an explanation of why it is necessary to ask personal questions. Some patients do not yet understand why the pharmacist needs to ask questions before recommending treatment. An example might be the following:

Patient	Can you give me something for my piles?
Pharmacist	I am sure I can. To help me give the best advice, though, I would like a bit more information from you, so I need to ask a few questions. Some of them will need to be a bit personal. Is that OK and would you like to come to a more private area?
Patient	That is fine.
Pharmacist	Could you start by telling me what sort of trouble you get with your piles?

Hopefully, this will lead to a description of most of the symptoms required for the pharmacist to make an assessment. Other forms of open questions could include the following: How does that affect you? What sort of problems does it cause you? By carefully listening and possibly reflecting on comments made by the patient, the pharmacist can obtain a more complete picture.

Patient Well, I get spells of bleeding and soreness. It has been going on for years.
Pharmacist You say years?
Patient Yes, on and off for 20 years since my last pregnancy. I have seen my doctor several times and had them injected, but it keeps coming back. My doctor said that I would have to have an operation, but I do not want one; can you give me some suppositories to stop the bleeding?
Pharmacist Bleeding . . .?
Patient Yes, every time I go to the toilet, blood splashes around the bowl. It is bright red.

This form of listening can be helped by asking questions to clarify points: ‘I am not sure I quite understand when you say . . .’, or ‘I am not quite clear what you meant by . . .’. Another useful technique is to summarise the information so far: ‘I would just like to make sure I have got it right. You tell me you have had this problem since . . .’.

Once this form of information gathering has occurred, there will be some facts still missing. It is now appropriate to move onto some direct questions.

Pharmacist How are your bowels . . . Has there been any change? (This question is very important to exclude a more serious cause for the symptoms that would require referral.)
Patient No, they are fine, always regular.
Pharmacist Can you tell me what sort of treatments you have used in the past, and how effective they were?

Other questions could include the following: What treatments have you tried so far this time? What sort of treatment were you hoping for today? What other medications are you taking at present? Do you have any allergies?

When the patient has been referred to the pharmacy by another healthcare professional or from a telephone triage service, such as NHS111, they may already have been asked some or many questions as part of that process. However, the pharmacy may receive very little information and in some cases may have been provided with simply the presenting complaint, e.g. ‘mouth ulcer’. The patient may think that all of the information they have already supplied has been sent to the pharmacy, so it is important to explain that it has not. Once the patient knows the reason why you seem to be asking questions that they have already been asked by someone else, they will understand why this is happening.

B. Decision-making

Triaging is the term given to assessing the level of seriousness of a presenting condition and thus the most appropriate action. It has come to be associated with both prioritisation (such as used in A&E) and clinical assessment. Most community pharmacists have developed procedures for information gathering to identify when the presenting problem can be managed within the pharmacy and when referral for medical advice is needed (so-called 'clinical pathways'). In making this clinical assessment, pharmacists incorporate management of certain conditions and make recommendations about them.

The use of protocols and algorithms in the triaging process is common in many countries, including the UK, with computerised decision-support systems increasingly used. Patients who are referred to you from NHS 111 (now used across most of the UK) will already have been subject to questions based on a decision-support algorithm. It is possible that in the future computerised decision support may play a greater part in face-to-face consultations, perhaps including community pharmacies.

If the consultation went like this, then a referral would be required.

Pharmacist Could you tell me what sort of trouble you have had with your piles?

Patient Well, I get spells of bleeding and soreness. It has been going on for years, although seems worse this time . . ..

Pharmacist When you say worse, what does that mean?

Patient Well . . . my bowels have been playing up and I have had some diarrhoea . . .. I have to go three or four times a day . . . and this has been going on for about 2 months.

For more information on when to refer, see '*D – Danger/red flag symptoms*' under the ASMETHOD pneumonic in the section '*Structuring the consultation*', further in the text.

C. Treatment and health advice

Next, we discuss selection of treatment, including assessing likely effectiveness and agreeing treatment choices with patients.

The pharmacist's background in pharmacology, therapeutics and pharmaceutics gives a sound base on which to make logical treatment choices based on the individual patient's need, together with the characteristics of the medicine concerned. In addition to the effectiveness of the active ingredients included in the product, the pharmacist will need to consider potential interactions, cautions, contraindications and adverse reaction profile of each constituent. Evidence-based practice requires pharmacists to carefully think about the effectiveness of the treatments they recommend, combining this with their own and the patient's experience.

About one in two patients will have tried at least one remedy before seeking the pharmacist's advice. Treatment may have consisted of OTC medicines bought from the pharmacy or elsewhere, other medicines prescribed by the doctor on this or a previous occasion, or medicines borrowed from a friend or neighbour or found in the medicine cabinet. Homoeopathic or herbal remedies may have been used. The cultural traditions of people from different ethnic backgrounds include the use of various remedies that they may not consider medicines. The availability of more medicines from online pharmacies (including P medicines via an authorisation process), online supermarket ordering and online shops, such as Amazon, have increased access to medicines, herbal products and supplements.

The pharmacist will elicit the patient's preferences and discuss treatment options. Concordance is an agreement reached after negotiation between the patient and pharmacist that respects the beliefs and wishes of the patient in determining which, whether, when and how OTC medicines are to be taken is fundamentally important.

Some pharmacies have developed their own OTC formularies with preferred treatments that are recommended by their pharmacists and their staff. In some areas, these have been discussed with local GPs and practice nurses to cover the referral of patients from the GP practice to the pharmacy. These may be area initiatives arranged by local healthcare organisations (clinical commissioning groups or health boards).

For symptoms discussed in this book, the section 'Management' includes brief information about the efficacy, advantages and disadvantages of possible therapeutic options. Also included are useful points of information for patients about the optimum use of self-help options, lifestyle interventions or OTC treatments, under the heading 'Practical points'. At any one time, not all of the medicines that could be sold OTC are available as OTC products. Throughout the book, we have included the names of medicines and, where possible, have also said where there is an OTC product available at the time of writing.

Key interactions between OTC treatments and other drugs are included in each section of this book. For further information, the British National Formulary (BNF) provides an alphabetical listing of drugs and interactions, together with an indication of clinical significance. In this book, generic drug names are used. Drug names or ingredients, where appropriate, are *italicised*.

Pharmacy PMRs can provide helpful information if the patient is a regular customer at the pharmacy. Review of concurrent prescribed drug therapy can identify potential drug interactions and adverse effects. Adding information to the PMR for certain patients, such as older people, can complete the medication profile.

Community pharmacies have access to parts of the NHS primary care medical record. In England, this is the Summary Care Record (SCR) and Local Health and Care Record, and there is a similar system in place in Wales and Scotland. With the patient's verbal consent, pharmacists can check medicine-related information when, in their clinical judgement, it is appropriate to do so. Using SCR, the pharmacist can access information for patients who are not regular users of the pharmacy, thus overcoming the lack of PMR for these patients, especially if they are unsure about the names of any of their prescribed medicines, the reason why they were prescribed or the relevant medical condition.

Health advice may be needed regardless of whether a treatment is recommended and symptom relief approaches, or simple reassurance and watchful waiting, can be appropriate in many conditions. Many guidelines include evidence-based health advice recommendations. An example of watchful waiting is seen with acute otitis media in children for which antibiotics are often requested (and in the past have been provided routinely). Ear pain associated with viral respiratory infections usually gets better in a similar time period with or without antibiotics, so pain relief medicines with *paracetamol* or *ibuprofen* are usually the best option while waiting for symptoms to resolve. Conjunctivitis in children is similar as most cases resolve without treatment in a few days.

There is increasing interest in the role of pharmacy in social prescribing. Social prescribing is a concept based on the recognition that many of the problems that are presented to healthcare may be helped by a social solution, rather than by providing medical treatments (or selling OTC products). Social prescribing involves helping patients to improve their health, wellbeing and social welfare by helping them connect to a variety of community services run by voluntary groups, the council or a local charity. One example is encouraging a person who has depression symptoms related to social isolation and loneliness to join a ramblers group, which will give them the company of other people, with the added bonus of increasing physical activity. The NHS has a number of initiatives designed to improve access to social prescribing. Pharmacies can get involved in local programmes, develop ties with 'social prescribing link workers', and keep information packs enabling patients to be signposted to relevant services.

D. Outcome

Most minor illnesses will improve with treatment and advice. Each consultation should include 'safety-netting' by explaining the timescale when further assessment and advice is needed if improvement has not occurred. This is set out for each condition in this book as 'Treatment timescale'. The treatment timescales outlined in this book naturally vary according to the symptom and sometimes according to the patient's age, but are usually less than 1 week.

Some sections of the book use the expression 'referral to doctor'. This is a commonly used expression within pharmacies and is generally well understood by patients. Increasingly in primary care, OOH service and A&E, patients may not see the doctor directly. Often trained nurses may assess patients, or sometimes suitably qualified clinical pharmacists, and they may prescribe treatment as independent prescribers or through PGDs. We have used this phrase for convenience, but if these alternative systems for assessment are established in your area, this may need explaining to patients. Alternatively, to indicate that a doctor may not always be directly involved we have used the expression 'referral to the GP surgery'.

Developing consultation skills

Effective consultation skills are the key to finding out what the patient's needs are, and deciding whether you can manage the problem or whether they might need to be referred to another practitioner. All community pharmacists will have learned consultation skills during their undergraduate, pre-registration or post-registration education. This section therefore aims to provide a summary relevant to consultations when responding to symptoms. A useful framework for thinking about and improving consultation skills is provided by Roger Neighbour's five 'checkpoints'.

A	Connecting	'Have we got a rapport?'	Rapport-building skills
B	Summarising (clinical process)	'Can I demonstrate to the patient I have understood why she has come?'	Listening and eliciting skills (history taking and summarising to the patient)
C	Handing over	'Has the patient accepted the management plan we agreed?'	Concordance skills
D	Safety-netting	'Have I anticipated all likely outcomes?'	Contingency plans
E	Housekeeping*	'Am I in good condition for the next patient?'	Taking care of yourself

**Housekeeping – This is a period of reflection where practitioners look at themselves and their response to the consultation. It may involve having a brief chat with a colleague, having a coffee break and thinking about it, or merely acknowledging to oneself whether a particular consultation has been effective or not.*

Challenges in pharmacy consultations

Face-to-face consultations will have comprised the majority of many community pharmacists' experience. Here, the pharmacist is likely to have minimal or no advance knowledge of what the patient wants to discuss. The pharmacist may or may not already know the patient and be aware of some of their medical and social situations. Pharmacists may therefore need to elicit more information from patients who are not regular users of their pharmacy, although research indicated there is often little or no difference in practice in the questions asked.

The COVID-19 pandemic has impacted on pharmacy consultations in several ways, including from the use of plastic screens to the wearing of masks. The combination of the barrier of the screen and wearing of masks may make it harder to hear and understand what is being said and picking up on non-verbal cues is more difficult when part of the face is covered. Another important change has been in the use of remote consultations.

Remote consultations

The COVID-19 pandemic has accelerated the move towards remote consultations throughout the NHS with telephone and video consultations now mainstream in primary care and in hospitals. Improvements in technology have enabled greater use of video consultations and the NHS has its own systems, such as *Attend Anywhere* for England and *Near Me* for Scotland. Many patients will now have some experience of remote consultations for health reasons. These changes have brought both benefits and drawbacks. Benefits include improved efficiency and the possibility of increasing access to pharmacist consultations, but there are also significant challenges; see Table B.

Face-to-face consultation remains the accepted norm in community pharmacy with use of remote consultations in specific circumstances. For example, in Scotland the criteria for use of the NHS video consultation service by pharmacies are if the patient is:

- Housebound
- Too ill to go to the pharmacy, or may have a contagious illness
- Resident in a care home
- Unable to attend the pharmacy due to work, caring responsibilities or issues with transport
- Self-isolating or ‘shielding’ during the COVID-19 pandemic

For those pharmacists who are getting to grips with remote consultations, a summary of potential challenges is provided in Table B. This is by no means exhaustive, but provides a framework for resolving some of the difficulties.

During the COVID-19 pandemic, a lot of interest has been shown in how best to consult remotely or ‘virtually’. There are several resources that are available to assist in ensuring that the required equipment can be used most efficiently, and in adapting the consultation style to make the process more productive. Pharmacists should consider this learning as an essential part of their continuing professional development. It is highly probable that remote consultations will still form a significant part of healthcare provision after the COVID-19 pandemic is over.

A useful set of current articles and resources are indicated in the following text. These are not exhaustive and may be subject to change. Some are those used in UK general practice.

TABLE B Summary of some of the challenges of remote consultations

	Telephone consultations	Video consultations
Access	• Almost everyone has access to a telephone	• Patient needs to own or have access to a smartphone, tablet, laptop or computer • Computer literacy varies • Risk of disadvantaging people who do not use the technology and those who are on low income
Appropriateness Risk management	• Need to assess if face-to-face consultation required	• Need to assess if examination needed to make diagnosis
Time management for both pharmacist and patient	• Call tends to be 'unscheduled' – best if use appointment system	• Use of appointment system important to make time, ensure availability of equipment, plus ensure privacy
Patient identification	• Not seeing the patient means that you will need a robust method to check that you are speaking to the right person	• If you know the patient, it is easy to know that you are speaking to the right person, but confirmation will still be required
Privacy and confidentiality	• Other people in the patient's location might hear what is being discussed	• Other people in the patient's location might see who the patient is talking to and hear what is being discussed • Important to check that patient is able to consult in privacy
Technical issues	• Signal strength for mobiles • Mobile phone battery charge running out	• Correct technology, equipment needed • Wi-Fi connection strength and consistency – 'freezing', etc. • Lighting

TABLE B (Continued)

	Telephone consultations	Video consultations
User issues	• Has patient got 'capacity' and cognitive skills? • Staff training required	• Has patient got 'capacity' and required cognitive skills? • Requires user familiarity with system • User error • Troubleshooting
Non-verbal communication	• Non-verbal communication and cues are absent	• Non-verbal communication and cues may be blunted
Interruptions and overlap	• Strategies needed to enable patient to describe problems adequately	• Speaking over one another because of lags between vision and sound
Hearing impairment	• Telephone volume can be adjusted, or acoustic loop used	• May allow lip reading by the patient
Shared decision-making	• Ensure patient has access to necessary information for informed choices	• Ensure patient has necessary information for informed choices. Can diagrams or illustrations assist?
Documentation	• Record-keeping will be necessary. If recording needs patient consent prior to recording	• Record-keeping necessary. May be significant confidentiality issues if taking 'snapshots' or recording – consent needed in advance

- Barnett, N. and Jubraj, B. (2020). Remote consultations: how pharmacy teams can practise them successfully. *The Pharmaceutical Journal*. From: `https://pharmaceutical-journal.com/article/ld/remote-consultations-how-pharmacy-teams-can-practise-them-successfully` (accessed 24 February 2022)
- Royal Pharmaceutical Society (2021). Remote consultations: conducting phone or video consultations. `https://www.rpharms.com/resources/pharmacy-guides/coronavirus-covid-19/clinical-resources-during-covid-19/upskilling-during-covid-19/remote-consultations` (accessed 24 February 2022)
- Royal College of General Practitioners. Remote consultation and triaging, resource hub (2021). `https://elearning.rcgp.org.uk/mod/page/view.php?id=10551` (accessed 24 February 2022)
- Royal College of General Practitioners. Top 10 tips for successful GP video consultations (2020). Available at: `https://www.rcgp.org.uk/about-us/rcgp-blog/top-10-tips-for-successful-gp-video-consultations.aspx` (accessed 24 February 2022)
- University of Oxford. Video consultations: a guide for practice (2020). Available at: `https://bjgplife.com/wp-content/uploads/2020/03/Video-consultations-a-guide-for-practice.pdf` (accessed 24 February 2022)
- NHS Education for Scotland. Video consultation checklist for clinicians (2020). Available at: `https://learn.nes.nhs.scot/28956/coronavirus-covid-19/remote-consulting-and-recruitment/video-consultation-checklist` (accessed 24 February 2022)

Structuring the consultation

Pharmacists need to develop a method of information seeking that works for them. There is no right and wrong here. It is very useful to adopt a framework to help structure the consultation.

The Calgary–Cambridge consultation model is widely taught in pharmacy, which includes:

- Initiating the consultation
- Gathering information
- Explanation and planning
- Closing the session

Some pharmacists find that a mnemonic, such as the two (WHAM and ASMETHOD) shown in the following text, can be a useful brief aide memoire, although care needs to be taken not to recite questions in rote fashion without considering their relevance to the individual patient. Good listening will glean much of the information required. Developing rapport is essential to obtain good information and reading out a list of questions can be off-putting and counterproductive.

W – Who is the patient and what are the symptoms?

H – How long have the symptoms been present?

A – Action taken?

M – Medication being taken?

W: Establish the identity of the patient: the person in the pharmacy might be there on someone else's behalf. The exact nature of the symptoms should be established: patients often self-diagnose illnesses, and the pharmacist must not accept such a self-diagnosis at face value.

H: Duration of symptoms can be an important indicator of whether referral to the doctor might be required. In general, the longer the duration, the more likely the possibility of a serious, rather than a minor, case. Most minor conditions are self-limiting and should clear up within a few days.

A: Any action taken by the patient should be established, including the use of any medication to treat the symptoms.

If the patient has used one or more apparently appropriate treatments without improvement, referral to the family doctor may be the best course of action.

M: All medicines taken regularly by the patient need to be identified for two reasons: possible interactions and potential adverse reactions. Such medicines will usually be those prescribed by the doctor, but may also include OTC products and complementary or alternative remedies. The pharmacist needs to know about all medicines being taken because of the potential for interaction with any recommended treatment.

The community pharmacist has an important role in detecting adverse drug reactions, and once the list of medicines has been obtained, consideration should be given to the possibility that the patient's symptoms might be an adverse effect caused by medication. Sometimes, the patient will perceive that this might be the case and ask about it. For example, whether a cough might be due to an angiotensin-converting enzyme inhibitor. When the pharmacist suspects an adverse drug reaction to a POM, a discussion with the prescriber about what actions should be taken may be needed (perhaps including a *Yellow Card* report to the Medicines and Healthcare products Regulatory Agency by the pharmacist or patient) and the prescriber may wish the patient to be referred back to them.

The second mnemonic, ASMETHOD, was developed by Derek Balon, a community pharmacist in London:

A – Age and appearance

S – Self or someone else

M – Medication
E – Extra medicines
T – Time persisting
H – History
O – Other symptoms
D – Danger/red flag symptoms

Some of the areas covered by the ASMETHOD list have already been discussed. The others are now considered.

‘A’ – Age and appearance

The appearance of the patient may indicate whether a minor or more serious condition is involved. If the patient looks pale, clammy, flushed or grey, referral to the doctor should be considered. For children, appearance is important, but asking the parent whether the child is generally well is also needed. A child who is cheerful and energetic is unlikely to have anything other than a minor problem, whereas one who is quiet and listless, or who is fractious, irritable and feverish, might require referral.

Age is important because some symptoms are potentially more serious according to age. For example, acute diarrhoea in an otherwise healthy adult could reasonably be treated by the pharmacist. However, such symptoms in a baby could produce dehydration more quickly; elderly patients are also at a higher risk of becoming dehydrated.

Age will also play a part in determining any treatment offered by the pharmacist. Some preparations are not recommended at all for children under 12 years, e.g. *loperamide*. Others must be given in a reduced dose or as a paediatric formulation. These are included in this book for each medicine.

Other OTC preparations have a minimum specified age, e.g. 12 years for nicotine replacement therapy and 16 years for treatments of vaginal thrush. Pharmacists are used to assessing patients’ approximate age and would not routinely ask for proof of age here, unless there was a specific reason to do so.

‘S’ – Clarification as to who is the patient – self or someone else?
‘M’ – Medication regularly taken, on prescription or OTC
‘E’ – Extra medication tried to treat the current symptoms
‘T’ – Time, i.e. duration of symptoms
‘H’ – History

There are three aspects to the term ‘history’ in relation to responding to symptoms: first, the history of the symptom being presented and second, previous medical history. For example, does the patient have diabetes, hypertension or asthma? PMRs should be used to record relevant existing conditions. A third aspect is social history; for example, the pharmacist might know that the patient had a recent bereavement and is now living alone, or that they lost their job and had to move to a flat without a garden.

Questioning about the history of a condition may be useful; how and when the problem began, how it has progressed and so on. Any previous episodes should be asked about to determine the action taken by the patient and its degree of success. For example, in recurrent mouth ulcers: Do the current ulcers resemble the previous ones? Was the doctor or dentist seen on previous occasions? Was any treatment prescribed or OTC medicine purchased, and, if so, did it work?

In asking about the history, the timing of particular symptoms can give valuable clues as to possible causes. The attacks of heartburn that occur after going to bed or on stooping or bending down are indeed likely to be due to reflux, whereas those that happen during exertion, such as exercise or heavy work, may not be (these may signify angina).

History taking is particularly important when assessing skin disease. Recognition of the appearance of skin conditions is not the most important factor and many dermatologists would argue that history taking is more important because some skin conditions resemble each other in appearance. Furthermore, the appearance may be altered during the course of the condition. For example, the use of a topical corticosteroid inappropriately on infected skin may substantially change the appearance; allergy to ingredients, such as local anaesthetics, may produce a problem in addition to the original complaint. Knowing which creams, ointments or lotions have been applied is essential.

‘O’ – Other symptoms

Patients generally tend to complain about the symptoms that concern them most. The pharmacist should always ask whether the patient has noticed any other symptoms or anything different from usual because, for various reasons, patients may not volunteer all the important information. Embarrassment may be one such reason, so patients experiencing altered bowel habit for a period of time may only mention that they are constipated or that their stools are loose.

The significance of symptoms may not be recognised by patients; for example, those who have constipation as a side effect from a tricyclic antidepressant will probably not mention their dry mouth because they can see no link or connection between the two problems.

‘D’ – Danger/red flag symptoms

These are the symptoms or combinations of symptoms that should ring warning bells for pharmacists that immediate referral to the doctor is required. They are often called ‘red flag’ symptoms and we refer to them as such throughout the rest of this book. Blood in the sputum, vomit, urine or faeces would be examples, as would unexplained weight loss. Red flag symptoms are included and discussed in each section of this book so that their significance can be understood by the pharmacist.

Decision-making and risk assessment

Most presenting symptoms will be of a minor and self-limiting nature and should resolve within a few days. We have already discussed safety-netting under ‘D. Outcome’ earlier in this section.

In making decisions, the pharmacist assesses the possible risk to the patient of different decision paths. The possible reasons for referral for further advice include the following:

- Red flag signs or symptoms
- Unknown cause for symptoms
- Incomplete information (e.g. an ear condition where the ear has not been examined)
- Duration or recurrence of symptoms
- Potential need for a POM

As a general rule, the following indicate a higher risk of a serious condition and should make the pharmacist consider referring the patient to the doctor:

- Long duration of symptoms
- Recurring or worsening problems
- Severe pain
- Failed medication (one or more appropriate medicines used already, without improvement)
- Suspected adverse drug reactions (to prescription or OTC medicine)
- Red flag symptoms

Each section of this book includes a suggested list of ‘When to refer’. At the end of the book, in the Appendix, we provide a summary of these with a set of pointers for direct referral; this mainly relates to physical illnesses.

Discussions with local GPs can assist the development of protocols and guidelines for referral, and we recommend that pharmacists take the opportunity to develop such guidelines with their medical and nursing colleagues in primary care, where possible. Often this process can be facilitated by the local healthcare organisation (clinical commissioning group or health board). Joint discussions of this sort can lead to effective two-way referral systems and local agreements about preferred treatments.

EFFECTIVENESS OF TREATMENTS AND REFERENCE SOURCES USED IN THIS BOOK

Treatment recommendations should, wherever possible, be based on evidence. For more recently introduced medicines and for those that have moved from POM to P medicine, there is usually an adequate evidence base. For some medicines, particularly older ones, there may be little or no evidence. Here, pharmacists need to bear in mind that absence of evidence does not in itself signify absence of effectiveness. Patients may still wish to exercise their choice to buy a medicine for which there is less evidence of effectiveness than the one the pharmacist has recommended.

Current evidence of effectiveness is summarised in the relevant BNF monograph. The BNF is updated every month online and can be found at `https://bnf.nice.org.uk/`

Useful websites for clinical guidelines and clinical evidence in the UK are:

- NHS Evidence – `www.evidence.nhs.uk`
- Clinical Knowledge Summaries (CKS) – `https://cks.nice.org.uk`
- The Scottish Intercollegiate Guideline Network (SIGN) – `www.sign.ac.uk`
- The National Institute for Health and Care Excellence (NICE) – `www.nice.org.uk`

Not all of these websites can be accessed from outside the UK (all websites accessed 28 February 2022).

The joint website for NHS Health A–Z and NHS Medicines A–Z (`www.nhs.uk`) includes symptom checkers and management advice for minor ailments and is intended for use by people in England (although this resource appears widely used across the UK). The website also has information on investigations (e.g. endoscopy) and operations (e.g. knee replacement), as well as aftercare. The NHS Health A–Z and Medicines A–Z resources are based on and reflect CKS and the BNF for much of their content in a manner which can be easily digested by patients and help them make choices about treatment.

Similar resources are available in Scotland at `www.nhsinform.scot` and in Wales at `www.wales.nhs.uk/healthtopics`. Again, not all of these websites can be accessed from outside the UK.

This book draws wherever possible on these clinical guidelines and resources when discussing clinical management. Some conditions do not have a clinical guideline and here, the book draws on evidence from high-quality systematic reviews, such as those produced by the Cochrane collaboration. The Cochrane resources, which include *Clinical Answers*, are available worldwide and the English portal is at `www.cochranelibrary.com`. In the absence of such reviews, randomised controlled trials may be referred to.

For many common conditions, research evidence may be lacking as treatment approaches have evolved and developed over many years; in such cases, a consensus of best practice has usually been agreed (such as within NICE, CKS or public health guidance).

LAYOUT OF THE CHAPTERS IN THIS BOOK

The majority of chapters in this book contain separate sections for specific symptoms or conditions. Each section starts with a brief description and then provides information on:

- *What you need to know* (yellow box) - helping to frame relevant questions
- *Significance of questions and answers*
- *When to refer* (blue box)
- *Treatment timescale* (pink box)
- *Management* - including treatment options
- *Practical points*
- *Case studies*

THE FUTURE

In addition to their expanded role in the management of minor conditions, community pharmacists are likely to be increasingly involved in the management of long-term chronic or intermittent conditions, such as hypertension, asthma or COPD, in the future. Here, monitoring of progress is important and a series of consultations is likely to be necessary, rather than just one. Access to the SCR or ideally, integrating directly within primary care medical records will aid this process.

Symptom self-assessment apps that can be used by members of the public on smartphones and tablets have progressed considerably since the previous edition of this book. The apps bring together ‘reasoning’ technology based on artificial intelligence with a database of medical conditions. Information from some of the symptom checker apps could be shared with the pharmacist to make the process more efficient. As with online resources, the quality and content of these apps may be variable and if the pharmacist has doubts, these should be raised with the patient.

As we discuss in a new chapter in this edition, *Pharmacogenomics* (similar in meaning to pharmacogenetics) is an exciting, developing field of pharmacology. There is increasing interest in the use of pharmacogenomic testing in the pharmacy, but currently information that can be used to alter clinical decision-making and is clearly proven to improve clinical outcome is very limited. Nevertheless, consumers in many countries, including the UK, can now purchase a test from pharmacies and may ask their community pharmacist for their views on the value of testing or for help in acting on the results. Perhaps the most important role of the pharmacist at this current time is to advise on the place of pharmacogenomic tests, their usefulness, suitability and limitations.

Further POM to P switches are anticipated, with the continuing move to increase the clinical role of community pharmacists and to share the management and monitoring of long-term conditions that were previously within the domain of the GP. At the time of writing, there is increasing community pharmacy involvement in cardiovascular risk assessment, as well as in treating hypertension and hyperlipidaemia. Such changes will move the boundaries for preventive treatment of otherwise healthy people and expand the scope of practice of community pharmacists further.

Finally, the COVID-19 pandemic has had a major impact on how the NHS organises healthcare, the place of patient choice, the boundaries of selfcare, the roles of healthcare professionals, and in particular, on how respiratory tract infections are managed. We have tried to highlight some of these changes in the update for chapter 1 on respiratory problems, and in the new chapter 2 on COVID-19 and long-COVID. This was prepared at the time of a predicted transition of COVID-19 from a pandemic to an endemic state. We recognise this is a moving field and subject to further developments. There is some uncertainty about how this will play out so careful attention to health policy, the evolving evidence, and national guidelines will be needed in the future.

About the Companion Website

This book is accompanied by a companion website:

www.wiley.com/go/Blenkinsopp/Pharmacy

The website includes:

- Multiple choice questions and answers for practice.

CHAPTER 1

Respiratory Problems

COUGHS AND COLDS

Coughs and colds comprise a mixture of viral respiratory tract infections (RTIs). Although coughs and colds are nearly always self-limiting, some people visit their general practitioner (GP) for treatment, and there is concern about overprescribing antibiotics as these do not improve outcome. Self-management or getting advice and support from a pharmacist are usually much better options. Many people choose to buy over-the-counter (OTC) medicines for symptomatic relief and this is to be encouraged. However, some of the ingredients of OTC cold remedies may interact with prescribed therapy, occasionally with serious consequences. Therefore, careful attention needs to be given to taking a medication history. Educating people on the self-limiting nature of symptoms is also important.

Respiratory infection symptoms may be related to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) with the risk of having or spreading coronavirus disease (COVID-19), which can be serious in some people, particularly in those who are vulnerable. All pharmacies have developed strict hygiene principles. In addition to following these principles, the pharmacist needs to be able to triage patients if COVID-19 is a possible cause. However, as symptoms are similar with colds, flu and SARS-CoV-2 infections, during the COVID-19 pandemic, all patients meeting certain diagnostic criteria (which are subject to change) should consider staying at home and follow the latest guidance on testing. Patients who telephone to ask for advice who have symptoms suggesting COVID-19 should be told not to visit the pharmacy or surgery. Advice on SARS-CoV-2 may continue to be modified with

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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

the emergence of new variants and with findings of new studies. This issue is discussed further in a separate chapter.

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Establishing who the patient is – child or adult – will influence the pharmacist's decision about the necessity of referral to the doctor and choice of treatment. Children are more susceptible to RTI than are adults and may get complications. Very young children and babies are also at increased risk of bronchiolitis, pneumonia and croup, and these conditions need to be considered. Older people, particularly if they are frail and have comorbidities (e.g. diabetes), may be at risk of developing complications, such as pneumonia, and are at higher risk of serious illness and death if they catch flu or SARS-CoV-2 infection.

What you need to know

Age (approximate)
  Child or adult
  Duration of symptoms
  Runny/blocked nose
  Summer cold
  Sneezing/coughing
  Generalised aches/headache
  High temperature
  Sore throat
  Earache
  Facial pain/frontal headache
  Flu
  Loss or disturbance of taste and/or smell
  Asthma
  Previous history
    Allergic rhinitis
    Bronchitis
    Heart disease
  Present medication

Duration

Patients may describe a rapid onset of symptoms over hours or a gradual onset of symptoms over a day or two; the former is said to be more commonly true of flu (as well as COVID-19) and the latter of the common cold. This is generally the case rather than definitive. The symptoms of the common cold usually last for 7–14 days. Some symptoms, such as a cough, may persist after the worst of the cold is over and coughing for 3 weeks is not unusual. This is often poorly recognised; therefore, expectations of recovery may be unrealistic, and it is worth advising patients that this may happen.

Symptoms

Runny/blocked nose

Most patients will experience a runny nose (i.e. rhinorrhoea). This is initially a clear watery fluid, which later becomes a thicker and more tenacious, often coloured, mucus. Nasal congestion occurs because of dilatation of blood vessels, which leads to swelling of the lining surfaces of the nose and can cause discomfort. This swelling narrows the nasal passages that are further blocked by increased mucus production.

Summer colds

The main symptoms of summer colds are nasal congestion, sneezing and irritant watery eyes; similar symptoms are commonly caused by allergic rhinitis (see Allergic rhinitis: Duration, later in this chapter).

Sneezing/coughing

Sneezing occurs because the nasal passages are irritated and congested. A cough may be present (see Cough: What you need to know, later in this chapter) either because the pharynx is irritated (producing a dry, tickly cough) or as a result of irritation of the bronchus due to postnasal drip.

Box 1.1 RTIs (self-limiting) – usual durations

The average total lengths of the illnesses are as follows:

- Acute otitis media (AOM): 4 days
- Acute sore throat/acute pharyngitis/acute tonsillitis: 1 week
- Common cold: One and a half weeks
- Acute rhinosinusitis: Two and a half weeks
- Acute cough/acute bronchitis: 3 weeks

Aches and pains/headache

Headaches may be experienced because of inflammation and congestion of the nasal passages and sinuses. A fever may also cause headache. A persistent or worsening frontal headache (pain above or below the eyes) may be due to sinusitis (see section on Facial pain/frontal headache later in this chapter). People often report muscular and joint aches and these are more likely to occur with flu and COVID-19 than with the common cold (see section on Flu later in this chapter).

High temperature

Those suffering from a cold often complain of feeling hot; however, in general, a high temperature (e.g. exceeding 38°C) will not be present. The presence of fever may be an indication that the patient has flu or COVID-19 rather than a cold (see section on Flu later in this chapter, and Chapter 2 on COVID-19).

Sore throat

The patient often feels their throat is dry and sore during a cold and this may sometimes be the first sign that a cold is imminent. A sore throat can be a prominent feature in colds and flu, and it is often treated erroneously as a throat infection (see the separate section on sore throat later in this chapter). Sore throat can also be a feature of COVID-19.

Earache/otalgia

Earache is a common complication of colds, especially in children. When nasal mucus and congestion is present, the ear can feel blocked. This is due to the blockage of the Eustachian tube, which connects the middle ear to the back of the nasal cavity. Under normal circumstances, the middle ear is an air-containing compartment. However, if the Eustachian tube is blocked, the ear can no longer be cleared or air pressure equilibrated through swallowing, which may make the patient feel uncomfortable and deaf. This situation often resolves spontaneously, but decongestants and inhalations can be helpful (see 'Management' below). Sometimes, the situation worsens when the middle ear fills up with fluid and is under pressure (see Figure 1.1). When this does occur, the ear becomes acutely painful (otalgia). This ear pain is common in young children and usually the best treatment is pain-relief medicine. A secondary infection with inflammation may follow and when this occurs, this is called acute otitis media (AOM). However, even in the context of suspected infection, the evidence for antibiotic use is conflicting with some trials showing benefit and others showing no benefit from taking antibiotics. In a Cochrane review of AOM, overall the evidence from clinical trials shows that

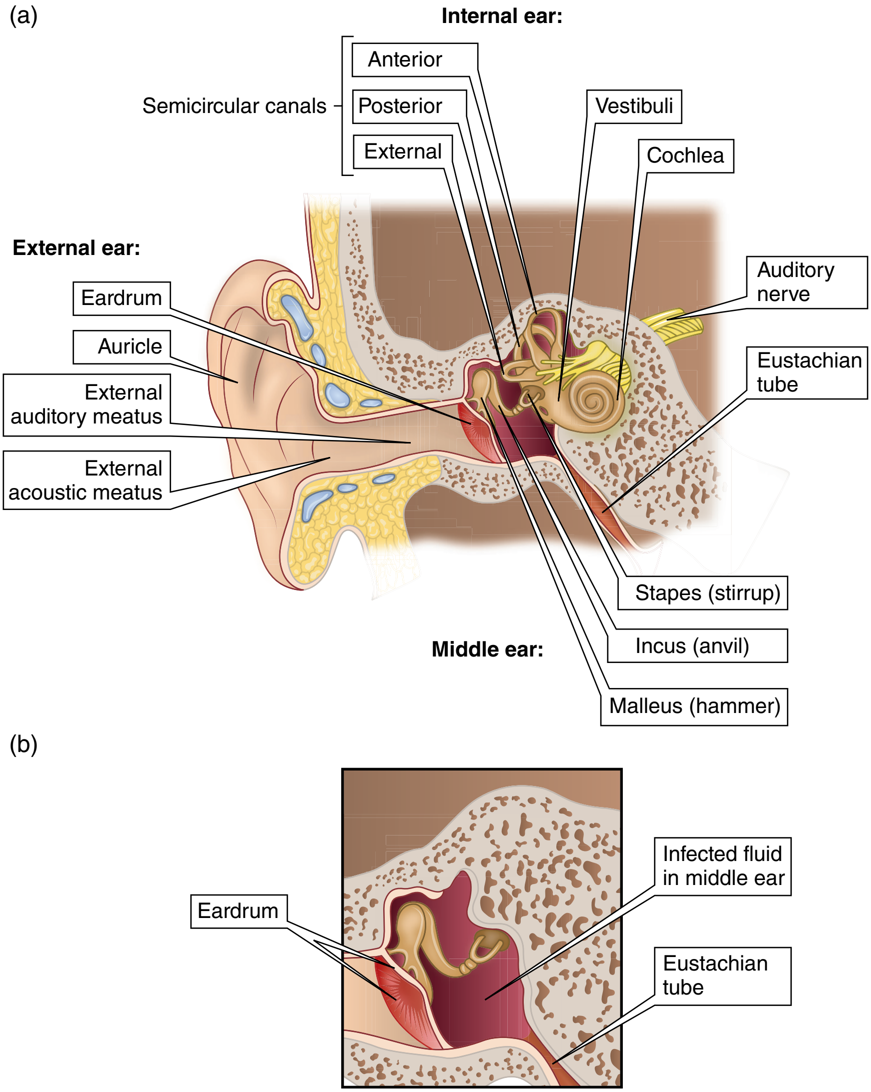

(a)
Internal ear:
Semicircular canals
Anterior
Posterior
External
Vestibuli
Cochlea
Auditory nerve
Eustachian tube
External ear:
Eardrum
Auricle
External auditory meatus
External acoustic meatus
Stapes (stirrup)
Incus (anvil)
Middle ear:
Malleus (hammer)
(b)
Eardrum
Infected fluid in middle ear
Eustachian tube

FIGURE 1.1 (a) Structure of the ear with (b) build-up of fluid in the middle ear causing pressure and pain, i.e. otalgia. If the ear becomes inflamed or infected, this is called AOM. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 63. Reproduced with permission of John Wiley & Sons.

without antibiotic treatment, symptoms will improve within 24 h in 60% of children and will settle spontaneously within 3 days in 80% of children. Antibiotics have also been shown to increase the risk of vomiting, diarrhoea and rashes, and these risks can be greater than the potential for benefit. Antibiotics are most useful in children under 2 years of age who have pain in both ears or a painful ear with discharge from that ear (i.e. otorrhoea); therefore, in these circumstances, suggesting getting a fairly rapid assessment by a doctor or nurse is appropriate. Do not advise patients that antibiotics may be needed as this raises expectations that may not be met; it is better to say that examination is required.

In summary, a painful ear can initially be managed by the pharmacist. There is evidence that *paracetamol* and *ibuprofen* are effective treatments for both otalgia and AOM. However, if pain persists or is associated with an unwell child (e.g. high fever, very restless or listless, and vomiting), then refer to the GP practice.

Facial pain/frontal headache

Facial pain or frontal headache may signify sinusitis. The paranasal sinuses are air-containing spaces in the bony structures adjacent to the nose (maxillary sinuses) and above the eyes (frontal sinuses); see Figure 1.2. During a cold, their lining surfaces become inflamed and swollen, producing mucus. The secretions drain into the nasal cavity. If the drainage passage becomes blocked, fluid builds up in the sinus, which causes pain from pressure and is called acute sinusitis. It can become secondarily (bacterially) infected, but this is rare. If this happens, more persistent pain arises in the sinus areas. The maxillary sinuses are those most commonly involved. A recently updated systematic Cochrane review indicated only a small benefit from antibiotics even in acute sinusitis that had lasted for longer than 7 days.

However, antibiotics may be recommended if the symptoms of sinusitis persist for more than 10 days or are severe with fever (i.e. a temperature of >38°C), severe local pain and discoloured or purulent nasal discharge, or if a marked deterioration in sinusitis symptoms develops following a recent cold that had started to settle (so-called ‘double sickening’). These may be reasons to direct patients for further

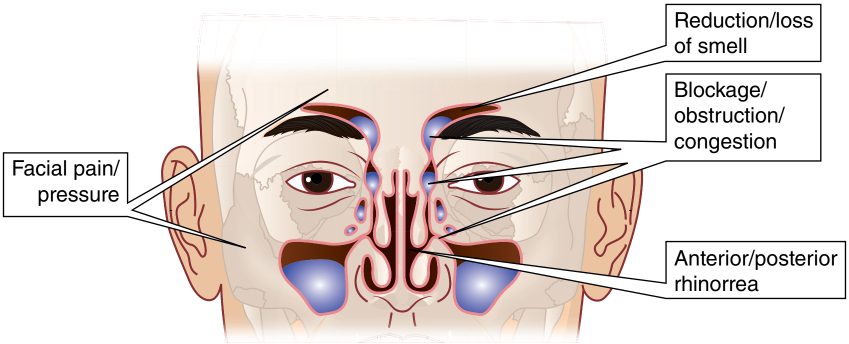

Reduction/loss of smell
Blockage/ obstruction/ congestion
Facial pain/ pressure
Anterior/posterior rhinorrea

FIGURE 1.2 Position of the paranasal sinuses and symptoms of sinusitis. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 66. Reproduced with permission of John Wiley & Sons.

assessment. When these features are not present, treatment should be aimed at symptom relief. Options include *paracetamol* or *ibuprofen* to reduce pain; an intranasal decongestant (for a maximum of 1 week, in adults only) may help if nasal congestion is problematic. Oral decongestants, which are commonly found in combination products with an analgesic, are generally not recommended for sinusitis. Steam inhalation or nasal irrigation with saline are sometimes advised for painful sinuses. Care should be taken to avoid scalding with steam inhalation and it is not advised in children. Sitting in the bathroom with a running hot shower is a safer option. There is some evidence that nasal irrigation is more effective than steam inhalation in the context of persistent or recurrent sinusitis. Drinking adequate fluids and rest will generally help.

Flu

Differentiating between colds and influenza (and now COVID-19) may be needed to make a decision about whether referral is needed for patients in 'at-risk' groups who might need to be considered for antiviral treatment. Influenza (flu) is generally considered to be likely, if:

- Temperature is 38°C or higher (37.5°C in the elderly).
- A minimum of one respiratory symptom, such as cough, sore throat, nasal congestion or rhinorrhoea, is present.
- A minimum of one constitutional symptom, such as headache, malaise, myalgia, sweats/chills or prostration, is present.

As these symptoms are similar to that of SARS-CoV-2 infection, while COVID-19 is still a concern, all patients should consider staying at home and following the latest guidance (see the separate chapter 2 on COVID 19).

Infection with the influenza virus usually starts abruptly with sweats and chills, muscular aches and pains in the limbs, dry sore throat, cough and high temperature. Someone with flu may be bedbound and unable to go about usual activities, which differentiates it from viruses causing a cold. There is often a period of generalised weakness and malaise following the worst of the symptoms, and this may last a week or more. A dry cough may also persist for some time.

True influenza is relatively uncommon compared with the large number of 'flu-like' infections that occur. However, when a flu outbreak occurs, it can spread rapidly throughout a community (it is then said to be a 'flu epidemic'). Influenza is generally more unpleasant than a cold, although both usually settle with no need for referral. As with other viral coughs and colds, for most people, there is nothing to be gained by taking antibiotics for flu, but antibiotics are often prescribed inappropriately, 'just in case'. It is important to avoid overuse of antibiotics to reduce the development of bacteria that are resistant to them, called antibiotic resistance.

Because of damage caused to the airways by the influenza virus, flu can be complicated by secondary lung infection (pneumonia or pneumonitis). Such complications are much more likely to occur in young babies, who have not yet developed resistance, the very old and frail, who may have impaired immunological responses, and those who have pre-existing heart disease or respiratory disease (asthma or chronic obstructive pulmonary disease [COPD]), where further damage is more critical. People with kidney disease, a weak immune system or diabetes are also at greater risk of pneumonia. Warning that pneumonia complications are developing may be given by a severe or productive cough, persisting high fever, pleuritic-type chest pain (see Respiratory symptoms for direct referral at the end of this chapter) or delirium. If this is suspected, people with such symptoms need urgent referral for further assessment. In these cases, antibiotics may be an important treatment and their use should be reserved for such cases so that antibiotic resistance resulting from overuse does not compromise their effectiveness.

Asthma

Exacerbations of asthma can be triggered by respiratory viral infections. Most people with asthma learn to start or increase their usual medication to prevent such an occurrence. However, if these measures fail, referral is needed.

Previous history

People with a history of COPD, also sometimes called chronic bronchitis or emphysema, may need referral. The diagnosis of COPD should be considered in patients over the age of 35 years who are or have been long-term smokers and who have shortness of breath while doing exercise, persistent cough, regular sputum production and frequent winter ‘bronchitis’ or wheeze. Ideally, all COPD patients should get an annual flu immunisation, although this will not protect against colds or all strains of flu virus. Such patients may be advised to see their doctor if they have a bad cold or flu-like infection as it often causes an exacerbation of their COPD. The main signs to watch for are worsening cough, purulence of sputum and increasing shortness of breath. In this situation, the doctor is likely to increase the dose of bronchodilators (such as inhaled antimuscarinics and/or β_2-agonists) and prescribe oral steroids and a course of antibiotics. Certain OTC medications are best avoided in those with heart disease, hypertension and diabetes.

Present medication

The pharmacist must ascertain if any medicines are being taken by the patient. It is important to remember that interactions might occur with some of the constituents of commonly used OTC medicines.

If medication has already been tried for relief of respiratory virus symptoms with no improvement, and if the remedies tried were appropriate and used for a sufficient amount of time, referral for primary care assessment might occasionally be needed. However, in most cases of colds and flu, treatment with OTC medicines will be appropriate.

When to refer

Earache not settling with analgesic (see above)
In the very young
In the frail and old
In those with heart or lung disease, e.g. COPD, kidney disease, diabetes and a compromised immune system
With persisting fever and productive cough
With delirium
With pleuritic-type chest pain
Asthma

Treatment timescale

Once the pharmacist has recommended symptomatic treatment, the patient should be advised to consult with their nurse or doctor in several weeks (see **Box 1.1**) if the respiratory infection has not improved, or earlier if there is a marked deterioration in symptoms. If unsure, the patient can check with the pharmacist first; sometimes, all that is needed is further reassurance.

MANAGEMENT

The use of OTC medicines in the treatment of colds and flu is widespread, and such products are heavily advertised to the public. There is little doubt that appropriate symptomatic treatment can make the patient feel better; the placebo effect also plays an important part here. For some medicines used in the treatment of colds, particularly older medicines, there is little evidence available which allows effectiveness to be judged.

The pharmacist's role is to select appropriate treatment based on the patient's symptoms and available evidence, as well as taking into account the patient's preferences. The discussion of medicines that follows is based on individual constituents; the pharmacist can decide whether a combination of two or more drugs is needed.

The Commission on Human Medicines (CHM) of the United Kingdom (UK) made recommendations in 2009 about the safer use of cough and cold medicines for children under 12 years of age. As a result, the UK's Medicines and Healthcare products and Regulatory Agency (MHRA) advised that the following OTC cough and cold remedies should no longer be sold for children under the age of 6 years:

- Antitussives: *Dextromethorphan* (for children over 12 years only) and *pholcodine* – the British National Formulary (BNF) advises that these are now not generally recommended in children
- Expectorants: *Guaifenesin* and *ipecacuanha*
- Nasal decongestants: *Ephedrine, oxymetazoline, phenylephrine, pseudoephedrine* and *xylometazoline*
- Antihistamines: *Brompheniramine, chlorphenamine, diphenhydramine, doxylamine, promethazine* and *triprolidine*

Children aged between 6 and 12 years can still use these preparations, but with advice to limit treatment to 5 days or less. The MHRA rationale was that for children aged over 6 years,

> *'the risk from these ingredients is reduced because: they suffer from cough and cold less frequently and consequently require medicines less often; with increased age and size, they tolerate the medicines better; and they can say if the medicine is working'.*

Simple cough remedies (such as those containing glycerine, honey or lemon) are still licensed for use in children. Alternatively, for children over the age of 1 year, a warm drink of honey and lemon could be given.

Remember that all *aspirin*-containing products are contraindicated in all children under the age of 16 years. This includes oral *salicylate gels*.

Decongestants

Sympathomimetics

Sympathomimetics (e.g. *pseudoephedrine*) can be effective in reducing the symptoms of nasal congestion. Nasal decongestants work by constricting the dilated blood vessels in the nasal mucosa. The nasal membranes are effectively shrunk; therefore, drainage of mucus and circulation of air is improved, and the feeling of nasal stuffiness is relieved. These medicines can be given orally or applied topically. Tablets and syrups are available, as are nasal sprays and drops.

For nasal sprays/drops, advise the patient not to use the product for longer than 7 days. Rebound congestion (i.e. rhinitis medicamentosa) can occur with topically applied sympathomimetics, but not with orally given ones. The decongestant effects of topical products containing *oxymetazoline* or *xylometazoline* are longer lasting (up to 6 h) than those of some other preparations, such as *ephedrine*. Offer advice about the correct way to administer nasal drops and sprays. The MHRA advises that these decongestants can be used in children between the ages of 6 and 12 years for no more than 5 days, but they should not be used in children under the age of 6 years.

A combination topical product containing *xylometazoline* and *ipratropium* in a nasal spray is also available through pharmacy sales (P) for the symptomatic treatment of nasal congestion and rhinorrhoea (runny nose) in connection with common colds in adults aged 18 years and above. Use should not exceed 7 days. *Ipratropium* is an antimuscarinic/anticholinergic drug that helps to reduce mucus secretion.

Problems

Ephedrine and *pseudoephedrine*, when taken orally, have the theoretical potential to keep patients awake because of their stimulating effects on the central nervous system (CNS). In general, *ephedrine* is more likely to produce this effect than *pseudoephedrine*. A systematic review found that the risk of insomnia with *pseudoephedrine* was small compared with placebo.

Sympathomimetics can cause stimulation of the heart and an increase in blood pressure, and may affect diabetic control because they can increase blood glucose levels. These drugs should be used with caution (as per current BNF warnings) in people with diabetes, those with heart disease or hypertension and those with hyperthyroidism. The hearts of hyperthyroid patients are more vulnerable to irregularity, so stimulation of the heart is particularly undesirable.

Sympathomimetics are most likely to cause unwanted effects when taken orally and are unlikely to do so when used topically. Nasal drops and sprays containing sympathomimetics can therefore be recommended for those patients in whom oral drugs are less suitable. *Saline nasal drops*, things like *menthol inhalations* or sitting in a steamy room (e.g. in a bathroom with a running shower) would be other possible choices for patients in this group.

The interaction between sympathomimetics and monoamine oxidase inhibitors (MAOIs) is potentially extremely serious (although MAOIs are rarely prescribed these days); the interaction can induce a hypertensive crisis and several deaths have occurred due to this. This interaction can occur up to 2 weeks after a patient has stopped taking the MAOI; therefore, establishing if any medication has recently been discontinued is essential. There is a possibility that topically applied sympathomimetics could induce such a reaction in a patient taking an MAOI. Therefore, avoid both oral and topical sympathomimetics in these patients.

Cautions

Diabetes
Heart disease
Hypertension
Hyperthyroidism

Interactions: Avoid in those taking

MAOIs (e.g. *phenelzine*)
Reversible inhibitors of monoamine oxidase A (e.g. *moclobemide*)
Beta blockers
Tricyclic antidepressants (e.g. *amitriptyline*) – a theoretical interaction that appears not to be a problem in practice

Restrictions on sales of pseudoephedrine and ephedrine

In response to concerns about the possible extraction of *pseudoephedrine* and *ephedrine* from OTC products for use in the manufacture of methylamphetamine (crystal meth), restrictions were introduced in 2007. The medicines are available only in small pack sizes, with a limit of one pack per customer, and their sale has to be made by a pharmacist or by suitably trained pharmacy staff under the supervision of a pharmacist. When the MHRA reviewed these arrangements in 2015, it concluded that these measures had made an important contribution to reducing the misuse of *pseudoephedrine* and *ephedrine* in the UK.

Antihistamines (see also Allergic rhinitis (hay fever): Management, later in this chapter)

Antihistamines could theoretically reduce some of the symptoms of a cold, such as runny nose (rhinorrhoea) and sneezing, because of their antimuscarinic action. This is more pronounced in the older drugs (e.g. *chlorphenamine*, also known as *chlorpheniramine*, and *promethazine*) than the non-sedating antihistamines (e.g. *loratadine, cetirizine* and *acrivastine*). Non-sedating antihistamines are thus less effective in reducing symptoms of a cold. Antihistamines are not so effective in reducing nasal congestion. Some (e.g. *diphenhydramine*) may also be included in cold remedies for their supposed antitussive action (see Cough: Management – Cough remedies – Other constituents, later in this chapter) or to help the patient to sleep (included in combination products intended to be taken at night). Evidence indicates that antihistamines alone are not of benefit in the common cold, but they may offer limited benefit for adults in combination with decongestants, analgesics and cough suppressants.

Interactions: The problem of using antihistamines, particularly the older types (e.g. *chlorphenamine*), is that they can cause drowsiness. Alcohol will increase this effect, as will drugs, such as *benzodiazepines* or *phenothiazines* that can cause drowsiness or CNS depression. Antihistamines with known sedative effects should not be recommended for anyone who is driving or in whom an impaired level of consciousness may be dangerous (e.g. operators of machinery at work).

The older antihistamines may produce the same adverse effects as antimuscarinic/anticholinergic drugs (i.e. dry mouth, blurred vision, constipation and urinary retention). These effects are more likely if antihistamines are given concurrently with antimuscarinics, such as *hyoscine*, or with drugs that have antimuscarinic actions, such as tricyclic antidepressants or bladder antispasmodics (e.g. *oxybutynin*). Antimuscarinic drugs' adverse effects are also more likely to be problematic if antihistamines are taken by people using some inhaled drugs containing antimuscarinics used for COPD, such as *ipratropium* or *tiotropium*. In older and frail people, the combined effects of several drugs with antimuscarinic/anticholinergic properties can be particularly troublesome (often referred to as 'anticholinergic load') and may also aggravate confusion or memory problems.

Antihistamines should be avoided in patients with a history of angle-closure glaucoma (usually this is glaucoma that will have presented acutely) or prostatic symptoms because of possible antimuscarinic side effects. In patients with angle-closure glaucoma, antihistamines may cause increased intraocular pressure. Drugs with an antimuscarinic effect can occasionally precipitate acute urinary retention in predisposed patients, e.g. men with prostatic problems (lower urinary tract symptoms [LUTS]) where bladder outlet obstruction causes poor urinary flow.

The probability of such serious adverse effects is low, but needs to be borne in mind.

At high doses, antihistamines can produce stimulation rather than depression of the CNS. There have been occasional reports of fits being induced at very high doses of antihistamines, and it is for this reason that it has been argued that they should be avoided in epileptic patients. However, this appears to be a theoretical problem rather than a practical one.

Interactions

- Alcohol
- Hypnotics
- Sedatives
- *Betahistine*
- Antimuscarinics

Side effects

- Drowsiness (driving, occupational hazard)
- Constipation

- Blurred vision
- Urinary symptoms
- Confusion

Cautions

- Closed-angle glaucoma
- LUTS in men
- Epilepsy
- Liver disease

Zinc

Two systematic reviews have found limited evidence that *zinc gluconate* or *acetate lozenges* may reduce continuing symptoms at 7 days compared with placebo. Therefore, it is generally not recommended that people take *zinc supplements* for colds.

Echinacea

A systematic review of trials indicated that some echinacea preparations might be better than placebo or no treatment for the prevention and treatment of colds. However, due to variations in preparations containing echinacea, there is insufficient evidence to recommend a specific product. Echinacea has been reported to cause allergic reactions and rashes.

Vitamin C

A systematic review found that high-dose *vitamin C* (over 1 g/day) taken prophylactically could reduce the duration of colds by a slight amount (about 8%). Although it is relatively cheap and safe, general advice is that there is not much to be gained from taking extra *vitamin C* for colds.

Cough remedies

For discussion of products for the treatment of cough, see the section on cough later in this chapter.

Analgesics

For details of analgesics, their uses and side effects, see Chapter 4: Painful Conditions: Management.

Products for sore throats

For discussion of products for the treatment of sore throat, see the separate section later in this chapter.

PRACTICAL POINTS

Inhalations

Breathing in warm moist air generated by steam (with or without the addition of aromatic oils) has traditionally been used to reduce nasal congestion and soothe the air passages. The BNF warns against using boiling water because of the risk of burns. Inhalants for use on handkerchiefs, bedclothes and pillowcases are available. These usually contain aromatic ingredients, such as *eucalyptus* or *menthol*. There has been a move away from recommending steam inhalations for children because of the risk of scalding, and aromatic inhalants should not be used in those aged 3 months or younger.

Nasal sprays or drops?

Nasal sprays are preferable for adults and children over 6 years old because the small droplets in the spray mist reach a large surface area. Drops are more easily swallowed, which increases the possibility of systemic effects.

For children under the age of 6 years, drops are preferred because in young children, the nostrils are not sufficiently wide to allow the effective use of sprays. Paediatric versions of nasal drops should be used where appropriate. Nasal *saline* drops or sprays may help to reduce nasal congestion in babies and young children.

Prevention of colds and flu

Flu immunisation – adults

Pharmacists should encourage those eligible to have an annual flu vaccination. In the UK, until 2019, the health service was providing vaccinations to all patients over the age of 65 years. Starting in 2020, annual flu jabs had been offered to all those over the age of 50 years because of the concern that the combination of coronavirus and flu infection may be particularly dangerous, and also because reducing flu infections may help to reduce pressure on the National Health Service (NHS) and social care staff who may be dealing with coronavirus. For winter 2022/2023 the plan is to return to offering flu vaccines to those over 65 plus high risk patients, although this may be subject to change.

The flu jab is also offered to all other people, aged over 6 months, who are deemed at high clinical risk. This includes those with chronic respiratory disease (including asthma), chronic heart disease, chronic renal failure, chronic neurological disease, and diabetes mellitus or immunosuppression due to disease or treatment.

All pregnant women, and people living in long-stay residential care, are also advised to have immunisation alongside those who are the main carer for an older or disabled person, particularly if the person they care for is at high risk from coronavirus. All frontline health or social care workers are also advised to be immunised, and this would include pharmacy staff.

Recommendations are updated every year; therefore, it is important to be aware of any changes to these 'campaigns'. Community pharmacists are in a good position to use their patient medication records (PMRs) to target patients each autumn and remind them to have their vaccination, or in some cases administer it. Many community pharmacies in the UK are now commissioned by the health service to provide flu vaccinations (as well as COVID-19 jabs; see the chapter on COVID-19).

Flu immunisation – children

It is useful to be aware of the use of flu immunisations in children. As with adults the guidance is usually updated annually. The nasal spray flu vaccine is currently provided on the NHS for all children aged between 2 years and 15 years. If a person is aged 16 or 17 years and requires flu vaccine because they are at high clinical risk they should also receive the nasal spray rather than an injection.

If the child is aged between 6 months and 2 years and is in a high-risk group for flu, he/she will be offered a flu vaccine injection instead of the nasal spray. This is because the nasal spray is not licensed for children under the age of 2 years. Children aged 2–17 years may also have the flu vaccine injection if the nasal spray vaccine is not suitable for them.

Reducing transmission – hand hygiene and face masks

Prior to COVID-19, increasing attention was being paid to ways of reducing transmission of flu and colds. Many lessons have now been learnt from coronavirus. This has shown how good hygiene practice, as well as social distancing, can also prevent transmission of other respiratory viruses, such as colds and flu.

Routine handwashing with soap and water for at least 20 s (the advice is for the time taken to sing happy birthday twice) reduces the transmission of respiratory viruses and is the best method to eradicate them. Ethanol-based hand sanitisers can be used if immediate access to soap and water is difficult in everyday settings. Cold viruses and both SARS-CoV-2 and the influenza virus are susceptible to alcohol in formulations of greater than 60% ethanol. They are widely used in healthcare environments, and since the COVID-19 pandemic, use is now commonplace in shops and domestic settings too, and this can contribute to reducing transmission of colds, flu and coronavirus. The rationale is that these viruses can survive for up to 72 h on hard surfaces and for several hours on the skin. Coronavirus survives longer than the cold or flu virus. Touching contaminated hands, surfaces and objects can transfer the virus, and washing hands or using hand sanitiser as soon after exposure as possible is important to reduce transmission. People should be advised not to touch their eyes, nose or mouth if their hands are not clean, but touching the face is a normal, regular habit and may be difficult to suppress.

Transfer of respiratory viruses usually occurs directly from person to person when an infected individual breathes, coughs or sneezes, and this appears to be the commonest route of transmission. Droplets of respiratory secretions or an aerosol comes into contact with the mucous membranes of the mouth and nose of another person. The eye may be another route of entry. People should use tissues to cover their mouth and nose when coughing or sneezing, and should put used tissues in a bin as soon as possible. Other guidance related to experience with COVID-19 is the wearing of a face mask covering the nose and mouth whenever it is hard to stay away from people, such as in shops or on public transport, when this is local or national policy. This reduces the chances of spreading viruses to others. Keeping a distance as much as possible is also a reasonable precaution – ideally 2 metres or more. Ventilation has proved important by opening windows, doors and air vents whenever this can be done.

Flu pandemic

A flu pandemic is an epidemic of an influenza virus that spreads on a worldwide scale and infects a large proportion of the world population. There were three flu pandemics in the last century, occurring in 1918, 1957 and 1968. There was also a worldwide pandemic in 2009 with a large number of cases in the UK. Concerns about potential pandemics have arisen because of the emerging strains of influenza from animals or birds (zoonoses). In 1997, an avian H5N1 strain of influenza emerged, which has a high mortality rate. Although this virus is highly virulent, it does not spread easily between humans. Nearly all, if not all, cases have been spread from contact between humans and infected birds. The concern is that the virus may mutate, making transmission between humans more likely. As there is no natural immunity to this virus, a pandemic could follow, and if the virulence remained unchanged, then it could be extremely deadly. It is not possible to predict how likely this scenario is. The recent experiences with COVID-19 have made the threat of such pandemics much more tangible.

The Department of Health has issued various publications detailing the evidence base for dealing with pandemic flu for the UK as a whole, specifically making recommendations on vaccination and use of antivirals, antibiotics and face masks (see `https://www.gov.uk/guidance/pandemic-flu`).

Antivirals and seasonal flu

The National Institute for Health and Care Excellence (NICE) supports the use of *oseltamivir* and *zanamivir* (neuraminidase inhibitors) in seasonal flu outbreaks for those who are in at-risk groups if treatment is started within 36 h (*zanamivir*) or within 48 h (*oseltamivir*). These drugs can also be used to prevent transmission of flu (prophylaxis) under some circumstances. Advice to use these drugs for prophylaxis is triggered if the incidence of flu hits a specific threshold. The incidence is monitored by a national surveillance scheme. The other licensed antiviral *amantadine* is generally not recommended because of its lower efficacy and adverse effects, as well as due to the fact that rapid resistance can develop to its use.

The effectiveness of antivirals during a pandemic cannot be known until used in such a situation and can only be guessed at based on experience in seasonal influenza and in those infected with animal strains of flu. It is believed that these drugs are likely to reduce the chance of developing complications, including the chance of dying, and shorten the time taken to recover from an infection. It is possible that using antivirals for the non-infected members of a household when another member has the infection could reduce the spread of the pandemic. There is uncertainty as to how much resistance to antivirals could develop with their widespread use in the context of pandemic flu.

Antibiotics

A serious complication of flu (as well as COVID-19) is the development of pneumonia, which can be either directly due to the virus or due to a secondary bacterial infection. In the case of a viral pneumonia or 'pneumonitis', antibiotics are of little value, although clinically it is difficult to tell the difference. Antibiotics are usually given in a hospital setting to patients with a severe illness. Avian flu outbreaks have been mainly complicated by viral pneumonia.

In uncomplicated influenza infections in the community, antibiotics may be considered in those at risk, such as people who have pre-existing COPD, compromised immunity, diabetes or heart or lung disease. In these situations, if there is no improvement within 48 h of starting antibiotics, then the person should be reviewed by the GP (or in the out-of-hours service, e.g. at the weekend).

Typical flu chest symptoms include cough, retrosternal discomfort, wheeze and phlegm (symptoms of acute bronchitis) and by themselves do not require antibiotics in a person who is not at risk. However, if these symptoms worsen with a persistent or recrudescent (recurring) fever, pleuritic-type chest pain or breathlessness, then pneumonia might be developing. In this situation, review by a doctor or nurse would be essential and either treatment with antibiotics in the community or hospital admission could follow.

COUGHS AND COLDS IN PRACTICE

Case 1

Mrs Allen, a regular customer in her late 60s, asks what you can recommend for her husband. He has a very bad cold that he caught from their baby grandson; the worst symptoms are his blocked nose and sore throat. Although his throat feels sore, she tells you there is only a slight reddening (she looked this morning). He has had the symptoms since last night and is not feverish. He does not have earache, but has complained of a headache. When you ask her if he is taking any medicines, she says yes, quite a few for his heart. She cannot remember what they are called. You check the PMR and find that he is taking *aspirin* 75 mg daily, *ramipril* 5 mg daily, *bisoprolol* 10 mg daily and *atorvastatin* 20 mg daily. Mrs Allen asks you if it is worth her husband taking extra vitamin C as she has heard this is good for colds. She wondered if this might be better than taking yet more medicines.

The pharmacist's view

The patient's symptoms indicate a cold rather than flu. COVID-19 is unlikely as the infection was caught from the baby, and both Mr and Mrs Allen have had their COVID-19 jabs, but the family might want to consider having COVID-19 tests. Mr Allen is concerned most with his congested nose and sore throat. He is taking a number of medications, which indicates that oral sympathomimetics would be best avoided. You recommend that Mr Allen take regular simple painkillers for his sore throat and a topical decongestant or an inhalation to clear his blocked nose. The symptoms may take about 1 week before they start to clear. You offer these alternatives to Mrs Allen to see what she thinks her husband might prefer. You explain that taking vitamin C may slightly reduce the length and severity of colds, although this is not a large effect; in addition, it will not do much harm. You show Mrs Allen some vitamin C products and tell her their cost. You also ask if Mr Allen has had a flu jab as he is in an 'at-risk' group.

The doctor's view

The advice given by the pharmacist is sensible. It does sound like a cold rather than flu or COVID-19. A simple analgesic, such as *paracetamol*, could help both ease the headache and soothe the sore throat. The development of sinusitis at such an early stage in an infection would be unlikely, but it would be wise to enquire whether Mr Allen's colds are usually uncomplicated and to ascertain the site of his headache. Although a lot of people believe in the benefits of vitamin C, it probably makes little difference.

The patient's view

I came to the pharmacist because we did not want to bother the doctor. The pharmacist asked me about which symptoms were causing Pete (my husband) the biggest problem and he gave me a choice of what to use. I wanted to know what he thought about vitamin C and he told me about how it might make the cold shorter. In the end though, I decided not to bother with it because it would have been quite expensive with the other medicines as well, especially as it was unlikely to help much. I thought I would give him some fresh orange juice instead. I decided to give him regular *paracetamol*, which I was advised is OK alongside his low-dose *aspirin*.

COUGH

The respiratory tract between the nose and the lung is exposed daily to inhaled viruses and bacteria, particulates, such as dirt or smoke, and also gaseous or irritant material with potentially harmful effects. See Figure 1.3 for an illustration of the anatomy. Defence mechanisms protect the airways from these insults or inhaled foreign bodies, such as bits of food. Healthy airways are lined by ciliated cells and covered with a mucus layer that traps inhaled particles and foreign pathogens. The cilia beat upwards and propel the mucus and trapped debris up the trachea and out of the respiratory system (sometimes called the 'mucociliary escalator'). As this accumulates, it is cleared by coughing – a normal everyday protective reflex action that is the result of rapid exhalation. Sputum (or phlegm) is mucus that has been coughed up from the lower airways (the trachea and bronchi). Foreign bodies and irritants are expelled in a similar way.

When viruses invade the cells of the respiratory tract, they trigger inflammation and stimulate the production of mucus; these are the commonest causes of an increase in coughing, which becomes uncomfortable and can cause distress. The majority of coughs presenting in the pharmacy will be due to viral RTIs. They will often be associated with other symptoms of a cold, such as nasal congestion, a runny nose and a sore or scratchy throat. The infection usually lasts for a few days, but damage to the respiratory tract lining causing irritation takes longer to heal and a cough can last for several weeks. The evidence to support the use of cough

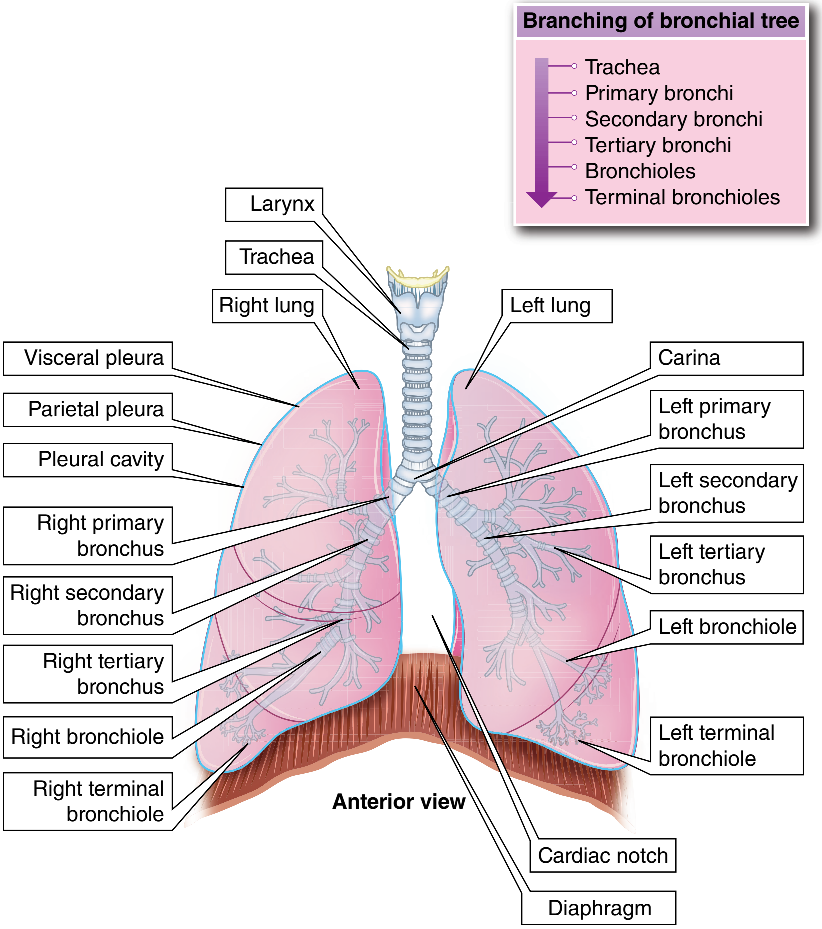

Branching of bronchial tree
Trachea
Primary bronchi
Secondary bronchi
Tertiary bronchi
Bronchioles
Terminal bronchioles
Larynx
Trachea
Right lung
Left lung
Visceral pleura
Parietal pleura
Pleural cavity
Right primary bronchus
Right secondary bronchus
Right tertiary bronchus
Right bronchiole
Right terminal bronchiole
Carina
Left primary bronchus
Left secondary bronchus
Left tertiary bronchus
Left bronchiole
Left terminal bronchiole
Anterior view
Cardiac notch
Diaphragm

FIGURE 1.3 Anatomy of the lower respiratory tract. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 25. Reproduced with permission of John Wiley & Sons.

suppressants and expectorants to relieve symptoms is not strong, but some patients find them helpful.

Alongside a high temperature and change in or loss of taste and/or smell, a common symptom of COVID-19 is a new continuous cough. Therefore, as a precaution while SARS-CoV-2 is a concern, any person with a new cough, even if mild, should consider staying at home and follow the latest guidance on testing.

What you need to know

- Age (approximate)
- Baby, child or adult
- Duration
- Nature
- Dry or productive
- Associated symptoms
  - Cold, sore throat and fever
  - Loss of or change in taste or smell
  - Sputum production
  - Haemoptysis (blood in sputum)
  - Chest pain
  - Shortness of breath
  - Wheeze
- Previous history
  - COPD (chronic bronchitis, emphysema, chronic obstructive airways disease)
  - Asthma
  - Diabetes
  - Heart disease
  - Gastro-oesophageal reflux (indigestion, dyspepsia)
  - Smoking habit
- Present medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Establishing who the patient is – child or adult – will influence the choice of treatment and the decision whether referral to the doctor's surgery is necessary.

Duration

Most coughs are self-limiting and will get better with or without treatment. Cough can often go on for 3 weeks or more after a bad cold, flu or COVID-19, but usually slowly subsides (see **Box 1.1**). It is useful to explain this fact as patients may not be aware of the long duration. Acute bronchitis is the term often used to describe more severe cases arising from a viral infection leading to distressing cough and sputum production. Even in acute bronchitis, antibiotics are not needed for people who are otherwise well. A Cochrane systematic review found no benefit or only slight benefit of using antibiotics, at the most reducing the duration of illness by about half a day.

In general, a cough of longer than 2–3 weeks' duration that has shown no improvement, or is getting worse, should be referred to the GP surgery for further investigation. This is particularly so if accompanied by feelings of tiredness, malaise or fever.

Patients are often concerned when a cough has lasted for, what seems to them, a long time. They may be worried that as the cough has not resolved, it may have a serious cause. Therefore, they can be reassured by a clear explanation of why a cough lingers.

Nature of cough

Unproductive (dry, tickly or tight)

In an unproductive cough, no sputum is produced. Such a cough is usually caused by viral infection that temporarily damages and irritates the airway and is self-limiting.

Productive (chesty or loose)

Oversecretion of mucus leads to coughing, and production of copious sputum is often called a productive cough. This may be caused by irritation of the airways due to infection, allergy, etc., or when the cilia are not working properly as the lining of the respiratory tract has been damaged; this is seen in long-term smokers. Non-coloured (clear or whitish) sputum is uninfected and known as mucoid. Green sputum is not unusual in people with asthma and is thought to be due to eosinophils.

Coloured sputum is common and, in most cases, does not mean that antibiotic therapy is needed. Clinical trials in relatively healthy people with acute bronchitis indicate that antibiotics do not help overall, and sputum colour does not predict response to antibiotic treatment. It may be more useful as a sign in people who have other lung complications. For example, in people with COPD, an exacerbation of their condition with more purulent sputum (e.g. a change in colour to green or yellow) may be a sign that there are bacteria involved and hence antibiotics may be indicated. Sometimes, blood may be present in sputum (haemoptysis), with a colour ranging from pink to deep red. Blood may be an indication of a relatively minor problem, such as a burst capillary following a bout of violent coughing during an acute infection, but may be a warning of more serious problems. Haemoptysis is an indication for referral.

Some people who have a tendency towards asthma develop wheeziness with a respiratory viral infection. They may benefit from inhalation treatment (or an increase in therapy) used in asthma, or possibly a short course of oral corticosteroids. Wheeziness as a symptom usually needs referral; however, people with asthma who get increased wheeziness with a cold often know how to self-manage by increasing their inhaler treatment and the use of ‘rescue therapy’.

If a person has had repeated episodes of bronchitis over the years, they might have developed COPD (or ‘chronic bronchitis’). This is defined as a chronic cough, excess sputum production, shortness of breath on exertion and wheeze, usually with a history of long-term smoking when other causes of chronic cough have been excluded. Therefore, careful questioning is important to determine this.

It is useful to be aware of those people where there may be a reason to consider antibiotics and refer accordingly. It is better to advise that further assessment is needed, rather than saying an antibiotic is indicated, which may raise expectations inappropriately. Antibiotics are usually considered if the person:

- Has severe symptoms, particularly sputum colour changes and increase in volume or thickness beyond normal
- Is systemically very unwell
- Is at high risk of serious complications because of a pre-existing comorbid condition, such as heart, lung, kidney, liver or neuromuscular disease or immunosuppression
- Is older or frail with one or more of the following:
  - Hospital admission in the previous year
  - Type 1 or type 2 diabetes mellitus
  - Known congestive heart failure
  - Use of oral corticosteroids

As with asthma, there may be some patients who get frequent exacerbations of COPD and have been provided with ‘rescue therapy’.

In heart failure and mitral stenosis, sputum is sometimes described as pink and frothy or it can be bright red. Confirming symptoms would be breathlessness (especially in bed during the night) and swollen ankles.

Tuberculosis

The number of tuberculosis (TB) cases has slowly declined after a rise in the UK between 2000 and 2010, but there is increasing concern about resistant strains. Chronic productive cough associated with breathlessness and haemoptysis are classical symptoms. There may also be weight loss, chronic fever and night sweats. TB is largely a disease of poverty and more likely to present in disadvantaged communities and in people who are malnourished. It is more common in urban areas.

In the UK, most cases of respiratory TB are seen in ethnic minority groups, especially Indians and Africans, and in immigrants from other countries with high rates of TB. Human immunodeficiency virus (HIV) infection is a significant risk factor for the development of respiratory TB.

Prolonged cough and lung cancer

Current advice is that if a cough lasts more than 3 weeks, the patient should be assessed by a clinician to consider the possibility of other lung diseases, particularly cancer. This is especially important for people who smoke.

Croup (acute laryngotracheitis)

Croup usually occurs in infants. The cough has a harsh barking quality. It develops within a day or so after the onset of cold-like symptoms. It is often associated with difficulty in breathing and an inspiratory stridor (noise in the throat on breathing in). Referral is usually necessary, particularly if the child has breathing problems or is so distressed that it affects eating, drinking or play.

Whooping cough (pertussis)

Despite immunisation programmes, whooping cough is still seen in the UK. It starts with symptoms similar to viral respiratory infections. The characteristic whoop is not present in the early stages of infection. The whoop is the sound produced when breathing in after a paroxysm of coughing. The bouts of coughing prevent normal breathing and the whoop represents the desperate attempt to get a breath. If suspected, referral is necessary.

Associated symptoms

Cold, sore throat and catarrh (nose, throat and sinuses congested with mucus – or ‘bunged up’) may be associated with a cough. Often, there may be an elevated temperature and generalised muscular aches. This would be in keeping with a viral infection and be self-limiting. There may be a need to stay and home and follow the latest guidance on testing. Chest pain, shortness of breath and wheezing are all indications for referral (see Respiratory symptoms for direct referral, at the end of this chapter).

Postnasal drip

Postnasal drip is a common cause of coughing and may be due to sinusitis (for more details, see Coughs and Cold: Symptoms: Facial pain/Frontal headache elaborated earlier in this chapter).

Previous history

Certain cough remedies are best avoided in people with diabetes and anyone with heart disease or hypertension (for more details, see Cough: Management: Cough remedies – Other constituents, later in this section).

COPD ('chronic bronchitis' or emphysema)

Questioning may reveal a history of COPD. Sometimes, this is being treated by the doctor with antibiotics. In this situation, further symptom relief may be possible with an appropriate cough medicine.

Asthma

A recurrent night-time cough can indicate asthma, especially in children, and such patients should be referred to the surgery. Asthma may sometimes present as a chronic cough without wheezing, usually worse first thing in the morning. It is worth asking about a family history of eczema, hay fever and asthma. Patients with such a family history appear to be more prone to extended episodes of coughing following a simple RTI.

Cardiovascular

Coughing can be a symptom of heart failure (see Respiratory symptoms for direct referral: Cardiac causes, at the end of this chapter). If there is a history of heart disease, especially with a persisting cough, then referral is advisable.

Gastro-oesophageal reflux

Gastro-oesophageal reflux can cause coughing. Sometimes, reflux is asymptomatic apart from coughing. Some patients are aware of acid coming up into their throat at night when they are in bed. It may also be indicated by cough that is worse during or after eating, as well as with talking and bending.

Smoking habit

Smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs. One in three long-term smokers develops a chronic cough that is usually worse in the morning. If coughing is recurrent and persistent, offer health education advice about the benefits of quitting smoking, including suggesting nicotine replacement therapy when appropriate. However, it is worth mentioning that on stopping smoking, the cough may initially become worse as the cleaning action of the cilia is re-established during the first few days with increased mucus production. Smokers may assume their cough is harmless. Therefore, it is always important to ask about any change in the nature of the cough that might indicate a serious cause, particularly due to the fact that smokers are at high risk of COPD and lung cancer (see also 'Smoking cessation' in the chapter on 'Prevention of heart disease').

Present medication

It is always essential to establish which medicines are currently being taken. This includes those prescribed by a doctor and any bought OTC, borrowed from a friend or neighbour, or rediscovered in the family medicine chest. It is important to remember the possibility of interactions of prescribed medicines with cough medicine. This may also be an issue with some herbal remedies.

It is also useful to know which cough medicines have already been tried so that the pharmacist may decide if an inappropriate preparation has been taken, e.g. a cough suppressant for a productive cough. If one or more remedies have been tried for an appropriate length of time without success, then referral may be advisable.

Angiotensin-converting enzyme inhibitors

Chronic coughing may occur in people taking angiotensin-converting enzyme (ACE) inhibitors, such as *enalapril, perindopril, lisinopril* and *ramipril*. Cough may start within days of starting treatment or after a few weeks or even months, and is estimated to affect from 2 to 10% of patients. ACE inhibitors cause bradykinin to accumulate in the lungs, which can trigger a cough. Typically, the cough is irritating, non-productive and persistent. Any ACE inhibitor may induce coughing; therefore, there seems to be little advantage to be gained in changing from one ACE inhibitor to another. In many people, the cough becomes so troublesome and distressing that ACE inhibitor therapy may have to be discontinued. Any patients in whom medication is suspected to be the cause of a cough should be referred to the prescriber. If cough is a problem, angiotensin II receptor antagonists, also known as the 'sartans', which have properties similar to that of ACE inhibitors and do not affect bradykinin, can be used as an alternative treatment.

When to refer

Cough lasting 2–3 weeks or more and not improving

Cough associated with significant fever, malaise or feeling of being unwell

Distressing cough in frail, older people

Concern about comorbidity, such as diabetes or heart disease

Sputum (purulent sputum in COPD), rusty or bloodstained

Haemoptysis – blood in sputum, coughing blood
Chest pain
Shortness of breath
Wheezing
Whooping cough or croup
Recurrent nocturnal cough
Suspected adverse drug reaction, ACE inhibitors
Failed medication

After a series of questions, the pharmacist should be in a position to decide whether treatment or referral is the best option.

Treatment timescale

Depending on the length of time the patient has had the cough and once the pharmacist has recommended an appropriate treatment, the patient should see their doctor 2–3 weeks after the cough started if it has not improved or sooner if it is getting worse.

MANAGEMENT

Pharmacists are well aware of the debate about to what extent cough remedies available OTC are effective; however, these medicines are widely used. A systematic review concluded that 'there is no good evidence for or against the effectiveness of OTC medicines in acute cough'. Many people who visit the pharmacy for advice do so because they want some relief from their symptoms, and, while the clinical effectiveness of cough remedies in reducing cough is debatable, they can have a useful soothing effect.

The choice of treatment depends on the type of cough. Suppressants (e.g. *pholcodine*) are used to treat unproductive coughs, while expectorants (e.g. *guaifenesin* [*guaiphenesin*]) are used to treat productive coughs. The pharmacist should check that the preparation contains an appropriate dose, since some products contain sub-therapeutic amounts. Demulcents, such as *simple linctus*, which soothe the throat, are particularly useful in children and pregnant women as they contain no active ingredients.

The *BNF* gives the following guidance:

- *Suppressants:* When there is no identifiable cause of cough, suppressants may be useful; for example, if sleep is disturbed. They may cause sputum retention and this may be harmful in patients with chronic bronchitis and bronchiectasis.

- *Demulcent cough preparations* contain soothing substances, such as syrup or glycerol, and some patients believe that such preparations relieve a dry irritating cough. Preparations such as *simple linctus* have the advantage of being harmless and inexpensive; paediatric *simple linctus* is particularly useful in children.
- *Expectorants* are claimed to promote expulsion of bronchial secretions; however, there is no evidence that any drug can specifically facilitate expectoration.
- *Compound preparations* are on sale to the public for the treatment of cough and colds, but these preparations should not be used in children under the age of 6 years; the rationale for some is dubious. Care should be taken to give the correct dose and to not use more than one preparation at a time.

There is no logic in using expectorants (which promote coughing) and suppressants (which reduce coughing) together as they have opposing effects. Therefore, products that contain both properties are not therapeutically sound. The UK CHM (part of the MHRA) made recommendations in 2009 about safer use of cough and cold medicines for children aged under 12 years (see BNF, and Coughs and colds: Management, elaborated on earlier in this chapter).

Cough suppressants

Controlled trials have not confirmed any significant effect of cough suppressants over placebo on symptom reduction.

Pholcodine/codeine

Pholcodine has several advantages over *codeine*. *Pholcodine* produces fewer side effects and is less liable to be misused. *Codeine* can cause constipation (even at OTC doses) and respiratory depression (at high doses). Both *pholcodine* and *codeine* can induce drowsiness, although in practice this does not appear to be a problem. Nevertheless, it is sensible to give an appropriate warning. *Codeine* is well known as a drug of misuse and dependence, and many pharmacists choose not to recommend it. Sales of *codeine* often may have to be refused because of knowledge or likelihood of its misuse. The CHM/MHRA advises that *codeine*-containing cough suppressants should not be used for children under 12 years and for children of any age known to be ultra-rapid metabolisers (see the chapter on Painful Conditions for a description of this). *Pholcodine* should not be given to those under the age of 6 years. It is also not generally recommended for older children, although a dose of 5 mg can be given to children over 6 years of age (5 ml of *Pholcodine Linctus BP* contains 5 mg of *pholcodine*). Adults may take doses of up to 15 mg three or four times daily. The drug has a long half-life and may be more appropriately given as a twice-daily dose.

Dextromethorphan

Dextromethorphan is less potent than *pholcodine* and *codeine*. It is generally non-sedating and has few side effects. Occasionally, drowsiness has been reported but, as for *pholcodine*, this does not seem to be a problem in practice. *Dextromethorphan* is generally not recommended for children, although it can be given to children of age 12 years and over (its use should be avoided in children younger than this age). *Dextromethorphan* was generally thought to have a low potential for misuse. However, there have been rare reports of mania following misuse and consumption of very large quantities, and pharmacists should be aware of this possibility if regular purchases are made.

Demulcents

Preparations such as *glycerine*, *lemon* and *honey* or *simple linctus* are popular remedies and are useful for their soothing effect. These preparations do not contain any active ingredient and are considered to be safe in children and pregnant women. They are now the favoured treatment for children under the age of 6 years.

Expectorants

Two mechanisms have been proposed for expectorants. They may act directly by stimulating bronchial mucus secretion, leading to increased liquefying of sputum, making it easier to cough up. Alternatively, they may act indirectly via irritation of the gastrointestinal tract, which has a subsequent action on the respiratory system, resulting in increased mucus secretion. The latter theory has less convincing evidence than the former to support it.

Guaifenesin (guaiphenesin)

Guaifenesin is commonly found in cough remedies. In adults, the dose required to produce expectoration is 100–200 mg; therefore, in order to have a theoretical chance of effectiveness, any product recommended should contain a sufficiently high dose. Some OTC preparations contain sub-therapeutic doses. In the United States, *guaifenesin* is the only Food and Drug Administration approved expectorant. NICE states that there is some limited evidence to suggest it may reduce symptoms of acute cough.

Cough remedies: Other constituents

Antihistamines

Examples used in OTC products include *diphenhydramine* and *promethazine*. Theoretically, these drugs reduce the frequency of coughing and have a drying effect on secretions, but in practice they also induce drowsiness. Combinations of antihistamines with expectorants are illogical and best avoided. A combination of an antihistamine and a cough suppressant may be useful in that antihistamines can help to dry up secretions through their antimuscarinic side effects; therefore, this combination can be given as a night-time dose if the cough is disturbing sleep. This is one of the rare occasions when a side effect may prove useful. The non-sedating antihistamines are less effective in symptomatic treatment of coughs and colds.

Interactions: Traditional antihistamines should not be used by patients who are taking *phenothiazines* and tricyclic antidepressants because of their additive antimuscarinic and sedative effects. Increased sedation will also occur with any drug that has a CNS depressant effect. Alcohol should be avoided because it will lead to increased drowsiness. See Coughs and colds: Management: Antihistamines, elaborated earlier in this chapter for more details of interactions, side effects and contraindications of antihistamines.

Sympathomimetics

Pseudoephedrine is used in cough and cold remedies (see also Coughs and colds: Management: Decongestants earlier in this chapter for information on restrictions on sales) for its bronchodilator and decongestant actions. It has a stimulant effect that may theoretically lead to a sleepless night if taken close to bedtime. *Pseudoephedrine* may be useful if the patient has a blocked nose, as well as a cough, and an expectorant/decongestant combination can be useful in productive coughs. Sympathomimetics can cause raised blood pressure, stimulation of the heart and alterations in diabetic control. Oral sympathomimetics should be used with caution, or avoided, in patients with the following:

- Diabetes
- Coronary heart disease (e.g. angina)
- Hypertension
- Hyperthyroidism

Interactions – Avoid in those taking:

- MAOIs (e.g. *phenelzine*)
- Reversible inhibitors of monoamine oxidase A (e.g. *moclobemide*)

- Beta blockers
- Tricyclic antidepressants (e.g. *amitriptyline*) – a theoretical interaction that appears not to be a problem in practice

Theophylline

Theophylline is sometimes included in cough remedies for its bronchodilator effect. OTC medicines containing *theophylline* should not be taken at the same time as prescribed *theophylline* since toxic blood levels and side effects may occur. The action of *theophylline* can be potentiated by some drugs, e.g. *cimetidine* and *erythromycin*.

Levels of *theophylline* in the blood are reduced by smoking and drugs such as *carbamazepine, phenytoin* and *rifampicin* that induce liver enzymes, so the metabolism of *theophylline* is increased and lower serum levels result.

Side effects include gastrointestinal irritation, nausea, palpitations, insomnia and headaches. The adult dose is typically 120 mg, three or four times daily. It is not recommended in children.

PRACTICAL POINTS

Diabetes

In short-term acute conditions, the amount of sugar found in cough medicines is relatively unimportant. Diabetic control is often upset during infections and the additional sugar is not considered to be a major problem. Nevertheless, many diabetic patients may prefer a sugar-free product, as will many other customers who wish to reduce sugar intake for themselves and their children. As part of their contribution to improving dental health, pharmacists can ensure that they stock and display a range of sugar-free medicines.

Steam inhalations

These therapies can be useful, although a systematic review found insufficient evidence to judge whether there might be a benefit. The steam helps to liquefy lung secretions and patients find the warm moist air comforting. While there is no evidence that the addition of medications to water produces a better clinical effect than steam alone, some may prefer to add a preparation such as *menthol* and *eucalyptus* or a proprietary inhalant. One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled. Apart from the risk of scalding, boiling water volatilises the constituents too quickly. A cloth or towel can be put over the head to trap the steam.

This method should not be used in young children because of the risk of scalding; sitting in the bathroom with a running hot shower is a safer option.

Fluid intake

Maintaining a good fluid intake helps maintain hydration, and hot drinks can have a soothing effect. For children, a warm drink of honey and lemon can also be soothing.

COUGHS IN PRACTICE

Case 1

Mrs Patel, a woman in her early 20s, asks what you can recommend for her son's cough. On questioning, you find out that her son, Dillip, aged 4 years, has had a cough on and off for a few weeks. He gets it at night and it is disturbing his sleep, although he does not seem to be troubled during the day. She took Dillip to the doctor about 3 weeks ago, and the doctor explained that antibiotics were not needed for his respiratory tract infection and that the cough would get better by itself. The cough is not productive and she has given Dillip some *simple linctus* before he goes to bed, but the cough is no better. Dillip is not taking any other medicines. He has no pain on breathing or shortness of breath. He had a cold recently.

The pharmacist's view

Dillip is a 4-year-old child who has a night-time cough for several weeks. The doctor's advice was appropriate at the time the doctor saw him. However, referral back to the GP surgery would now be advisable because the cough is only present during the night. A recurrent cough in a child at night can be a symptom of asthma, even if wheezing is not present. It is possible that the cough is occurring as a result of bronchial irritation following the child's recent viral RTI. Such a cough is more likely to occur in those who have asthma or a family history of atopy (including a predisposition to sensitivity to certain common allergens, such as house dust mite, animal dander and pollen, which also cause hay fever). Nevertheless, the cough has been present for several weeks without improvement and further medical advice is needed.

The doctor's view

Asthma is an obvious possibility. It would be interesting to know if anyone else in the family suffers from asthma, hay fever or eczema, and whether Dillip has ever had hay fever or eczema. Any of these features would make the diagnosis more likely. Mild asthma often presents in this way in children without the more recognisable symptoms of shortness of breath and wheezing.

An alternative diagnosis could still include a viral RTI. Most coughs are more troublesome and certainly more obvious during the night. This can falsely give the impression that the cough is only nocturnal. It should also be remembered that both diagnoses could be correct as a viral infection often initiates an asthmatic reaction. In addition, in young children with episodic breathlessness, wheeze and cough, a likely alternative diagnosis to asthma is viral-induced wheeze. Because the diagnosis is uncertain and inhaled oral steroids may be appropriate, referral to the surgery is advisable.

The parent's view

I was hoping the pharmacist could recommend something, but she seemed to think Dillip should see the doctor. She raised the possibility of asthma, which is worrying.

Case 2

A man aged about 25 years asks if you can recommend something for his cough. The man sounds as if he has a bad cold and looks a bit pale. You find out that he has had the cough for a few days, with a blocked nose and a sore throat. He has no fever, pain on breathing or shortness of breath. The cough was chesty to begin with, but the man tells you it is now tickly and irritating. Wisely, he initially stayed at home and got a COVID-19 test and this was negative. He has not tried any medicines nor is he taking any medicines from the doctor.

The pharmacist's view

This patient has the symptoms of common cold and none of the danger signs associated with a cough that would make referral necessary. COVID-19 is unlikely in view of the negative test. He is not taking any medicines, so the choice of possible treatments is wide. Hence, something could be recommended to treat his congested nose, as well as his cough, e.g. a cough suppressant and a sympathomimetic. *Simple linctus* and a systemic or topical decongestant would also be a possible option. If a topical decongestant were to be recommended, this patient should be warned to use it for no longer than 1 week to avoid the possibility of rebound congestion.

The doctor's view

The action suggested by the pharmacist is very reasonable. It is worthwhile explaining that to the patient that he is suffering from a viral infection that is self-limiting and should be better within a few days. If he is a smoker, then it would be an ideal time to encourage him to stop smoking. If the patient became short of breath or has symptoms such as loss of taste or smell, COVID-19 might still be the cause as there can be occasional false-negative results.

SORE THROAT

Most people with a sore throat do not consult a doctor; only about 5% do so and many consult their pharmacist. Most sore throats that present in the pharmacy are caused by viral infection (90%), with only 1 in 10 being due to bacterial infection. Even where there is bacterial infection, antibiotics make little difference on outcome; therefore, treatment with antibiotics is unnecessary in most cases. Clinically, it is difficult to differentiate between viral infections and bacterial infections. The majority are self-limiting. Sore throats are often associated with other symptoms of a cold, and determining whether cold symptoms, particularly a cough, are present is a useful way to triage cases (this makes a throat infection less likely). It is also important to realise that in the UK (as in many other countries), sore throat remains one of the main reasons for prescribing antibiotics. In many cases, these prescriptions are unnecessary. Overuse of antibiotics contributes to antibiotic resistance, which is an increasing public health concern, and antibiotics can also cause side effects, such as diarrhoea, nausea and vomiting.

Once the pharmacist has excluded more serious conditions (which may include COVID-19), an appropriate OTC medicine can be recommended.

What you need to know

Age (approximate)
Baby, child or adult

Duration

Severity

Associated symptoms

- Cold, congested nose and cough
- Difficulty in swallowing
- Hoarseness
- Fever
- Loss of taste or smell (or alteration in them)

Previous history
- Smoking habit

Present medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Establishing who the patient is will influence the choice of treatment and the decision whether referral to the GP surgery is necessary. Streptococcal (bacterial) throat infections are more likely in children of school age.

Duration

Most sore throats are self-limiting and will be better within 7 days. If a sore throat has been present for longer, then the patient should be referred to the GP surgery for further advice.

Severity

If the sore throat is described as being extremely painful, especially in the absence of cold, cough and nasal congestion symptoms, then referral should be recommended when there is no improvement within 24–48 h.

Associated symptoms

Cold, ‘bunged-up’ nose and cough may be associated with a sore throat. There may also be a fever and general aches and pains. These are in keeping with a minor self-limiting viral infection.

Both difficulty in swallowing (dysphagia), or hoarseness lasting longer than 3 weeks, are indications for referral. The former is sometimes seen with peritonsillar swelling or abscess (quinsy) associated with tonsillitis.

Loss of taste or smell (or alteration in them) is now a recognised feature of COVID-19, which can also cause sore throat. If this is suspected, the patient should consider staying at home and follow the latest guidance on COVID testing (see the chapter on COVID-19).

Previous history

Recurrent bouts of infection, such as tonsillitis in the past, would mean that referral is best.

Smoking habit

Smoking will exacerbate a sore throat, and if the patient smokes, then it can be a good time to offer advice and information about quitting smoking. Surveys indicate that two-thirds of people who smoke want to quit smoking (see also ‘Smoking cessation’ in the chapter on ‘Prevention of heart disease’).

Present medication

The pharmacist should establish whether any medication has been tried to treat the symptoms. If it is found that appropriate use of medicines has been tried without improvement for several days, then referral to the GP surgery may be indicated.

Current prescriptions are important and the pharmacist should question the patient carefully about them. Steroid inhalers (e.g. *beclometasone* or *budesonide*) can cause hoarseness and candidal infections of the throat and mouth. Generally, they tend to do this at high doses. Such infections can be prevented by rinsing the mouth with water after using the inhaler. It is also worthwhile checking the patient's inhaler technique. Poor technique with metred-dose inhalers can lead to large amounts of the inhaled drug being deposited at the back of the throat. If it is suspected that this is the problem, then discuss with the GP whether a device that will help coordination, such as a spacer, or perhaps a different inhaler, might be needed.

Any patient taking *carbimazole* and presenting with a sore throat should be referred immediately. A rare side effect of *carbimazole* is agranulocytosis (i.e. suppression of white cell production in the bone marrow). The same principle applies to any other drug that can cause agranulocytosis, including *methotrexate* and *azathioprine*, which are commonly used as disease-modifying drugs for long-term conditions. In such patients, a sore throat can be the first sign of a life-threatening infection.

SYMPTOMS FOR DIRECT REFERRAL

Hoarseness

Hoarseness is caused by inflammation of the vocal cords in the larynx (i.e. laryngitis). Laryngitis is typically caused by a self-limiting viral infection. It is usually associated with a sore throat and a hoarse, diminished voice. Antibiotics are of no value, and symptomatic advice (see 'Management' further in this section), which includes resting the voice, should be given. The infection usually settles within a few days and referral is not necessary.

When a respiratory infection occurs in babies, infants or small children, it can cause croup (acute laryngotracheitis), and severe cases may present with croakiness, difficulty in breathing and stridor (see Cough: Nature of cough: Croup). In this situation, referral is essential.

When hoarseness persists for more than 3 weeks, especially when it is not associated with an acute infection, referral to the GP surgery is necessary. There are many causes of persistent hoarseness, and some of them are serious. For example, laryngeal cancer can present in this way and hoarseness may be the only early symptom. A doctor will normally refer such a patient to an ear, nose and throat (ENT) specialist for accurate diagnosis.

Dysphagia

Difficulty in swallowing (dysphagia) can occur in severe throat infections. Sometimes, the infection causes pain, making swallowing very uncomfortable. Dysphagia can also happen when an abscess develops in the region of the tonsils (quinsy) as a complication of tonsillitis. This condition will usually result in a hospital admission where an operation to drain the abscess may be necessary and high-dose parenteral antibiotics may be given.

Glandular fever (GF), also known as infectious mononucleosis, is a viral infection that causes sore throat with marked discomfort, and it may cause dysphagia. The sore throat and associated malaise may linger for several weeks. If this is suspected, referral is necessary for an accurate diagnosis.

Most bad sore throats will cause discomfort, but not true difficulty, in swallowing and hence they do not necessarily need referral unless there are other reasons for concern. If the patient has difficulty taking fluids or food, referral for medical assessment is warranted.

Dysphagia always needs referral when it is not associated with a sore throat (see the chapter on Gastrointestinal Tract: Heartburn – Symptoms, Dysphagia).

Appearance of throat

Tonsils often have white patches on them in healthy people. These are part of the lymphatic immune system and are sometimes called tonsillar crypts. It is commonly thought that the presence of white spots, exudates or pus on the tonsils is an indication for referral or a means of differentiating between a viral and a bacterial infection, but this is not so. The appearance can be the same in both types of infection and sometimes the throat can appear almost normal without exudates in a streptococcal (bacterial) infection. In a sore throat, the tonsils may swell and become red, and pus may appear as white spots on them. Symptoms typically get worse over 2–3 days and then gradually go away, usually within a week. This condition is often described as tonsillitis and does not normally require treatment. If an exudate is present, then this may increase the likelihood of a bacterial infection, but as an isolated finding, it has poor diagnostic value.

Thrush

Candidal (thrush) infection produces white plaques, but these are rarely confined to the throat alone and are most commonly seen in babies or the very elderly. It is an unusual infection in young adults and may be associated with more serious disorders that interfere with the body's immune system, e.g. leukaemia, HIV and acquired immunodeficiency syndrome (AIDS), or with immunosuppressive therapy (e.g. oral corticosteroids or inhaled corticosteroids). The plaques may be seen in the throat and on the gums and tongue. When they are scraped off, the surface is raw and inflamed. Referral is advised if thrush is suspected, and the throat is sore and painful; see the chapter on Childhood Conditions: Oral thrush.

Glandular fever (infectious mononucleosis)

GF, also known as infectious mononucleosis, is a viral throat infection caused by the Epstein–Barr virus. It can leave its victims debilitated for some months afterwards and is associated with chronic fatigue syndrome (also known as myalgic encephalomyelitis). The infection is characterised by a sore throat that grumbles on with swollen lymph glands and also often causes general malaise, fatigue, muscle aches, chills, sweats, loss of appetite and headache. The most common age group affected is between 15 and 25 years of age. GF is sometimes known as the 'kissing disease'. A severe sore throat may follow 1 or 2 weeks of general malaise. The throat may become very inflamed with creamy exudates present. There may be difficulty in swallowing because of the painful throat. Glands (lymph nodes) in the neck and axillae (armpits) may be enlarged and tender. The diagnosis can be confirmed with a blood test, although this may not become positive until the second week of the illness; if the test is negative and there is a strong suspicion of GF, it should be repeated after a further week. Antibiotics are of no value; in fact, if *ampicillin* or *amoxicillin* is given during the infection, a measles-type rash is likely to develop in 80% of those with GF. Treatment is aimed at symptomatic relief.

When to refer

Sore throat lasting 1 week or more
Recurrent bouts of infection
Hoarseness of more than 3 weeks' duration
Difficulty in swallowing (dysphagia)
Failed medication
High temperature – >38°C

Use of clinical scoring systems

Research shows that having three or four 'Centor' criteria has some predictive value for those people who are most likely to have more serious infection and who are more likely to derive some benefit from antibiotic treatment. There are 4 criteria:

- Presence of tonsillar exudate
- Presence of tender neck glands

- History of fever
- Absence of cough – this suggests absence of cold symptoms

A recent refinement of this system, increasingly used by GPs, is the FeverPAIN score (i.e. fever in last 24 h, severely inflamed tonsils, pus on tonsils, attends within 3 days and no cough or cold symptoms). This is also now advocated by NICE (Centor remains an option) based on research in UK general practice showing that people with a score of 4 or 5 are the ones most likely to benefit from antibiotic treatment.

The same research also showed that this scoring system was just as useful as doing near-patient testing for the presence of beta-haemolytic streptococcus A (the bacteria most commonly associated with throat infection) using rapid antigen detection testing (RADT). Centor criteria or FeverPAIN may be useful systems to consider by the pharmacist when deciding who may benefit from referral to the GP surgery.

There have been some ‘test-and-treat’ initiatives to encourage pharmacists to use near-patient testing for streptococcus using RADT. This may be particularly helpful in the pharmacy setting as more formal clinical assessment may be difficult in this environment. If the result is positive, the patient should be referred or considered for provision of antibiotics. Although the presence of streptococcus in the throat, detected by RADT, makes this a likely cause of infection, some patients carry this bacterium but it is not always the cause of infection (carriage rates in healthy young people are between 10 and 20%). It is unclear at the time of writing this chapter if these services should also include near-patient testing for COVID-19 diagnosis (using lateral flow tests) as sore throat is a common feature of coronavirus infection.

Treatment timescale

Patients should see their doctor after 1 week if the sore throat has not improved.

MANAGEMENT

Most sore throats are self-limiting in nature, with 90% of patients feeling better or improving within 1 week of the onset of symptoms, whatever the cause and with or without antibiotics. The pharmacist can offer a selection of treatments aimed at providing some relief from discomfort and pain until the infection subsides. Oral analgesics are first-line treatment. A systematic review of clinical trials found that simple analgesics (*paracetamol, aspirin* and *ibuprofen*) are very effective in reducing the pain due to sore throat. Lozenges and pastilles have a soothing effect. There is some evidence that *benzydamine spray* is effective in relieving sore throat pain.

Oral analgesics

Paracetamol, aspirin and *ibuprofen* can provide rapid and effective relief from sore throat pain. A systematic review showed no benefit of adding other analgesic constituents. The use of *aspirin* has gone out of favour because of the increased risk of adverse effects. (For a discussion of doses, side effects, cautions and contraindications for simple analgesics, see the chapter on Painful Conditions: Management). The patient can be advised to take the analgesic regularly to sustain pain relief.

Flurbiprofen lozenges are licensed for sore throat in adults and children aged 12 years and over, and there is evidence that they provide pain relief. They contain 8.75 mg of *flurbiprofen* (a non-steroidal anti-inflammatory drug) and one lozenge is sucked or dissolved in the mouth every 3–6 h as required, to a maximum of five lozenges. *Flurbiprofen lozenges* can be used for up to 3 days at a time.

Mouthwashes and sprays

Anti-inflammatory (e.g. benzydamine)

Benzydamine is an anti-inflammatory agent that is absorbed through the skin and mucosa, and has been shown to be effective in reducing pain and inflammation in conditions of the mouth and throat. Side effects have occasionally been reported and include numbness and stinging of the mouth and throat. *Benzydamine spray* can be used in children under 12 years of age, whereas the mouthwash may only be recommended for children over 12 years of age.

Lozenges and pastilles

Lozenges and pastilles can be divided into three categories:

Antiseptic (e.g. *cetylpyridinium*)

Antifungal (e.g. *dequalinium*)

Local anaesthetic (e.g. *benzocaine* and *lidocaine*, also both available in throat sprays)

Lozenges and pastilles are commonly used OTC treatments for sore throats, and where viral infection is the cause, the main use of antibacterial and antifungal preparations is to soothe and moisten the throat. Lozenges containing *cetylpyridinium chloride* have been shown to have antibacterial action.

Local anaesthetic lozenges will numb the tongue and throat, and can help to ease soreness and pain. *Benzocaine* can cause sensitisation and such reactions have sometimes been reported.

PRACTICAL POINTS

Diabetes

Mouthwashes and gargles are suitable and can be recommended. Sugar-free pastilles are available, but the sugar content in such products is not considered important in short-term use.

Mouthwashes and gargles

Patients should be reminded that mouthwashes and gargles should not be swallowed. The potential toxicity of OTC products of this type is low, and it is unlikely that problems would result from swallowing small amounts. Manufacturers' recommendations about whether to use the mouthwash diluted or undiluted should be checked and appropriate advice should be given to the patient.

SORE THROATS IN PRACTICE

Case 1

A woman asks your advice about her son's very sore throat. He is 15 years old and is at home in bed. She says her son has a temperature and she can see creamy white matter at the back of his throat. He seems lethargic and has not been eating very well because his throat has been so painful. The sore throat started about 5 days ago and he has been in bed since yesterday. The glands on his neck are swollen.

The pharmacist's view

It would be best for this woman's son to be seen by the doctor or nurse. The symptoms appear to be severe and he is ill enough to be in bed. GF is common in this age group and this is a possibility. In the meantime, I might recommend some *paracetamol* in soluble or syrup form to make it easier to swallow. Both the analgesic and antipyretic effects would be useful in this case.

The doctor's view

The pharmacist is sensible in recommending referral. The description suggests a severe tonsillitis, which can be caused by either a bacterial or a viral infection. If it turns out to be viral, then there is a strong possibility of GF. The doctor or nurse should check out the ideas, concerns and expectations of the mother and son, and then explain the likely causes and treatment. Often, it is not possible to rule out a bacterial (streptococcal) infection at this stage. If the patient meets Centor or FeverPAIN criteria, then it may be advisable to prescribe oral *penicillin*, or alternatively *clarithromycin* if the patient is allergic to *penicillin*. These can be provided as an elixir, if necessary, to aid swallowing. *Amoxicillin* should not be used because of the risk of rash. Depending on the availability of laboratory services, the doctor may consider taking a throat swab to identify a bacterial infection. If the infection has gone on for over a week, then a blood test can identify glandular fever (GF). Although there is no specific treatment for GF, it is helpful for the patient to know what is going on and when to expect full recovery. If swallowing does not improve, particularly if fluids prove difficult, some patients need admission for intravenous fluids.

Case 2

A teenage girl comes into your shop with her mother. The girl has a sore throat, which started yesterday. There is slight reddening of the throat. Her mother tells you she had a slight temperature during the night. She also has a blocked nose and a tickly cough and has been feeling generally achy. She has no difficulty in swallowing and is not taking any medicines, either prescribed or OTC.

The pharmacist's view

It sounds as though this girl has a minor RTI. The symptoms described should improve within a few days. It is also possible that this could be COVID-19 so tests for this may be advised (dependent on latest guidance). The girl should consider staying at home until the diagnosis is clear, or symptoms have settled. It would be reasonable to recommend a systemic analgesic, such as *paracetamol*, perhaps in combination with a decongestant.

The doctor's view

The pharmacist's assessment sounds correct. Because the girl has a blocked nose and tickly cough, a viral infection is most likely. COVID-19 can also present in this way, particularly in younger people in whom it is usually a mild infection. Many patients 'pre-COVID' attended the GP surgery with similar symptoms hoping for a quick cure with antibiotics that have no place in such infections. At present, if COVID-19 is a possible cause, we triage these patients and advise they stay at home several days until symptoms have settled. They should not go to the pharmacy or the surgery!

Case 3

A middle-aged woman comes to ask your advice about her husband's bad throat. He has had a hoarse gruff voice for about 1 month and tried various lozenges and pastilles without success. He has been a heavy smoker (at least a pack a day) for over 20 years and works as a bus driver.

The pharmacist's view

This woman should be advised that her husband should see his doctor. The symptoms that have been described are not those of a minor throat infection. On the basis of the long duration of the problem and the unsuccessful use of several OTC treatments, it would be best for this man to attend the GP surgery for further investigation.

The doctor's view

A persistent alteration in voice, with hoarseness, is an indication for referral to an ENT specialist. This man should have his vocal cords examined, which requires skills and special equipment that most family doctors do not have. It is possible that the man may have a cancer on his vocal cords (larynx), especially as he is a smoker.

ALLERGIC RHINITIS (HAY FEVER)

Seasonal allergic rhinitis (hay fever) affects up to 25% of people in the UK, at one time or another, and millions of patients rely on OTC medicines for treatment. The symptoms of allergic rhinitis occur after an inflammatory response involving the release of histamine, which is initiated by allergens being deposited on the nasal and respiratory tract mucosa. The allergy may also affect the eyes. Allergens responsible for seasonal allergic rhinitis include grass pollens, tree pollens and fungal mould spores. Allergic rhinitis on exposure to cats or dogs is also relatively common, and sometimes horses, rabbits and rodents (such as pet guinea pigs, hamsters and rats) may trigger these symptoms. Animals shed particles of their skin or fur that are called dander to which some people develop an allergy. Perennial allergic rhinitis occurs when symptoms are present all year round and this is commonly caused by the house dust mite, animal dander, and feathers in cushions, pillows and duvets. Some patients may suffer from a form of perennial rhinitis that becomes worse in the summer months (possibly aggravated by tree or grass pollen allergy).

What you need to know

Age (approximate)
  Baby, child or adult
Duration
Symptoms
Rhinorrhoea (runny nose)
Nasal congestion
Nasal itching
Watery eyes
Irritated eyes
Eye discharge
Sneezing
Previous history
Associated conditions
Eczema
Asthma
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Symptoms of allergic rhinitis may start at any age, although it is more common in children and young adults. There is frequently a family history of atopy in allergic rhinitis sufferers (the typical atopy triad is asthma, hay fever and eczema). Thus, children of allergic rhinitis sufferers are more likely to have the condition. The condition often improves or resolves as the child gets older. Adults are more likely to develop perennial allergic rhinitis than younger people. Young adults who are taking examinations should avoid treatments that may cause drowsiness. People who drive or operate machinery also need to avoid treatment that causes drowsiness.

Duration

Sufferers will often present with seasonal rhinitis as soon as the pollen count becomes high around late March when tree pollens appear. The hay fever season may start 1 month earlier in the south than in the north of England. Hay fever peaks between the months of May and July when grass pollen levels are highest, and spells of good weather commonly cause patients to seek the pharmacist's advice. The weather forecast commonly gives information on pollen levels. Anyone presenting with a summer cold, perhaps of several weeks' duration, may be suffering from hay fever. Fungal spores are also a cause and are present slightly later, often until September.

People can suffer from what they think are mild cold symptoms for a long period, without knowing they have perennial rhinitis.

Allergic rhinitis can be classified as:

- *Intermittent:* Occurs less than 4 days/week or for less than 4 weeks
- *Persistent:* Occurs more than 4 days/week and for more than 4 weeks
- *Mild:* With all of the following – normal sleep; normal daily activities, such as sports and leisure; and normal work and school; symptoms not troublesome
- *Moderate or severe:* With one or more of the following – abnormal sleep; impairment of daily activities, such as sports and leisure; and problems caused at work or school; symptoms troublesome

Symptoms

Rhinorrhoea

A runny nose is commonly in allergic rhinitis. The discharge is often thin, clear and watery, but can change to a thicker, coloured, purulent one. This suggests a secondary infection, although the treatment for allergic rhinitis is not altered. There is usually no need for antibiotic treatment.

Nasal congestion

The inflammatory response caused by the allergen produces vasodilation of the nasal blood vessels and so results in nasal congestion. Severe congestion may result in headache and occasionally earache. Secondary infection, such as otitis media and sinusitis, can occur, but is rare.

Nasal itching

Nasal itching commonly occurs. Irritation is sometimes experienced on the roof of the mouth.

Eye symptoms

The eyes may be itchy and also watery; it is thought these symptoms are a result of tear duct congestion and also that of a direct effect of pollen grains being caught in the eye, setting off a local inflammatory response. The scleral conjunctivae (white of the eye) can become very swollen. Irritation of the nose by pollen probably contributes to eye symptoms too. People who suffer severe symptoms of allergic rhinitis may also be hypersensitive to bright light (photophobic) and find that wearing dark glasses is helpful.

Sneezing

In hay fever, the allergic response usually starts with sneezing and then rhinorrhoea, progressing to nasal congestion. Pollen rises during the day after being released in the morning and then settles at night, so symptoms of hay fever are classically more severe in the morning and in the evening. Patients may also describe a worsening of the condition on windy days as pollen is scattered, and a reduction in symptoms when it rains, or after rain, as the pollen clears. Conversely, in those allergic to fungal mould spores, the symptoms become worse in damp weather.

Previous history

There is commonly a history of hay fever going back over several years. However, it can occur at any age; therefore, the absence of any previous history does not necessarily indicate that allergic rhinitis is not the problem. The incidence of hay fever has risen during the last few decades. Pollution, particularly in urban areas, is thought to be at least partly responsible for this trend.

Perennial rhinitis can usually be distinguished from seasonal rhinitis by questioning about the timing and the occurrence of symptoms. People who have had hay fever before will often consult the pharmacist when symptoms are exacerbated in the summer months.

Wheezing

Difficulty in breathing, possibly with a cough, suggests either asthma or aggravation of asthma by pollen allergy. When associated symptoms, such as tightness of the chest, wheezing, shortness of breath or coughing, are present, same-day referral is usually advised. Some sufferers experience asthma symptoms only during the hay fever season (i.e. seasonal asthma). These episodes can be quite severe and hence require referral. People with seasonal asthma often do not have appropriate medication at hand as their attacks occur so infrequently, which puts them at greater risk.

Earache and facial pain

As with colds and flu (see Coughs and colds: Symptoms, discussed earlier in this chapter), allergic rhinitis can be complicated by increased fluid pressure in the middle ear or in the sinuses as mucosal swelling causes blockage of drainage of fluid caused by allergic inflammation. Secondary bacterial infection in the middle ear (otitis media) or the sinuses (sinusitis) can occur, but is rare. These conditions can cause persisting severe pain.

Purulent conjunctivitis

Irritated watery eyes are a common accompaniment to allergic rhinitis, often with swollen scleral conjunctivae. Occasionally, but rarely, allergic conjunctivitis is complicated by a secondary infection. When this occurs, the eyes become more painful (gritty sensation) and redder, and the discharge changes from being clear and watery to coloured and sticky (purulent). If this is suspected, referral may be needed.

Medication

Establish whether any prescription or OTC medicines are being taken by the patient to identify potential interactions with antihistamines.

Ask if any medicines have been tried already, especially where there is a previous history of allergic rhinitis. Some patients know that certain antihistamines cause them to become drowsy. Be aware of the potentiation of drowsiness by some antihistamines combined with other medicines. This can lead to increased danger in certain occupations and while driving.

Failed medication

If symptoms are not adequately controlled with OTC preparations, referral to the GP practice can enable exploration of the patient's beliefs and preconceptions about hay fever and its management. It is also an opportunity to suggest ideas and give advice on preparing for the next season.

When to refer

Diagnosis unclear
Wheezing and shortness of breath
Tightness of chest
Painful ear
Painful sinuses
Purulent conjunctivitis
Severe symptoms only partially relieved by OTC preparations
Failed medication

Treatment timescale

Improvement in symptoms should occur within a few days. If no improvement is noted after 7 days, consider referral to the GP surgery.

MANAGEMENT

Management is based on whether symptoms are intermittent or persistent and mild or moderate. Options include antihistamines, nasal corticosteroids and *sodium cromoglicate* (*sodium cromoglycate*) in formulations for the nose and eyes. Antihistamines and corticosteroid nasal sprays are generally equally effective in the treatment of allergic rhinitis. Antihistamines usually work within a day, but corticosteroid sprays may take several days to build up an effect. The choice of treatment should be based on the patient's symptoms and previous history, where relevant, as well as the patient's preference.

Many cases of hay fever can be managed with OTC treatment, and it is reasonable for the pharmacist to recommend treatment. Patients with symptoms that do not respond to OTC products can be referred to the GP surgery at a later stage. Pharmacists also have an important role in ensuring that patients know how to use any prescribed medicines correctly (e.g. corticosteroid nasal sprays, which must be used continuously for benefit).

Antihistamines

Many pharmacists consider these drugs to be the first-line treatment for mild-to-moderate and intermittent symptoms of allergic rhinitis. They are effective in reducing sneezing and rhinorrhoea, but less so in reducing nasal congestion. Non-sedating antihistamines available OTC include *acrivastine, fexofenadine, cetirizine* and *loratadine*. All are effective in reducing the troublesome symptoms of hay fever and have the advantage of causing less sedation than some of the older antihistamines.

Cetirizine, fexofenadine and *loratadine* are taken once daily, while *acrivastine* is taken three times daily. For-sale OTC, *loratadine* can be recommended for children over 2 years of age, *cetirizine* for those over 6 years of age, and *acrivastine* and *fexofenadine* for those over 12 years of age.

While drowsiness is an unlikely side effect of any of these drugs, patients might be well advised to try the treatment for a day before driving or operating machinery as drowsiness is still sometimes seen in some people. For students, similar advice can be given if exams are imminent.

Acrivastine, *cetirizine* and *loratadine* may also be used for allergic skin disorders, such as urticaria.

Older antihistamines, such as *promethazine* and *diphenhydramine*, have a greater tendency to produce sedative effects and are rarely used in hay fever these days. Indeed, both drugs are available in the UK among OTC products promoted for the management of temporary sleep disorders (see Chapter 9 on Insomnia). The shorter half-life of *diphenhydramine* (5–8 h compared with 8–12 h of *promethazine*) should mean less likelihood of a morning hangover/drowsiness effect.

Other older antihistamines are relatively less sedative, such as *chlorphenamine* (*chlorpheniramine*), but sedation can still occur in at least 1 in 10 patients. Patients may develop tolerance to their sedation effects. Antimuscarinic activity is very much lower among the newer drugs compared with the older drugs.

Interactions: The potential sedative effects of older antihistamines are increased by hypnotics, sedatives and anxiolytics, as well as alcohol consumption. The alcohol content of some OTC medicines should be remembered. Antihistamines may decrease the effects of *betahistine*.

Side effects: The major side effect of the older antihistamines is their potential to cause drowsiness. Their antimuscarinic/anticholinergic activity may result in a dry mouth, blurred vision, constipation and urinary retention. These effects will be increased if the patient is already taking another drug with antimuscarinic effects (e.g. tricyclic antidepressants, most commonly *amitriptyline*, and neuroleptics, such as *prochlorperazine*, *metoclopramide* or *haloperidol*). The BNF cautions against the use of older antihistamines in elderly patients.

At very high doses, antihistamines have CNS excitatory effects rather than depressive effects. Such effects seem to be more likely to occur in children. At toxic levels, there have been reports of fits being induced. As a result, it has been suggested that antihistamines should be used with care in epileptic patients. However, this appears to be a largely theoretical risk.

Antihistamines are best avoided in patients with a history of acute angle-closure glaucoma (i.e. episode of glaucoma of sudden onset), since the antimuscarinic effects produced can cause an increase in intraocular pressure. These drugs should be used with caution in patients with liver disease or prostatic hypertrophy.

Decongestants

Oral or topical decongestants may be considered for short-term use to reduce nasal congestion alone or in combination with an antihistamine. They can be useful in patients starting to use a preventer, such as a nasal corticosteroid (e.g. *beclometasone* or *sodium cromoglicate*), where congestion can prevent the drug from reaching the nasal mucosa. Topical decongestants can cause rebound congestion and should not be used for more than 1 week. Their use, interactions and adverse effects are considered in the section on Coughs and colds: Management: Decongestants, discussed earlier in this chapter.

Eye drops containing an antihistamine and sympathomimetic combination (*antazoline* with *xylometazoline)* are available and may be of value in troublesome eye symptoms, particularly when symptoms are intermittent. The sympathomimetic acts as a vasoconstrictor, reducing irritation and redness. Some patients find that the vasoconstrictor causes painful stinging when first applied. Eye drops that contain a vasoconstrictor should not be used in patients who have glaucoma or who wear soft contact lenses.

Steroid nasal sprays

Beclometasone nasal spray (aqueous pump rather than aerosol version), *budesonide nasal spray, fluticasone metered nasal spray* and *mometasone nasal spray* can be used for the treatment of hay fever and are available OTC for this indication.

A corticosteroid nasal spray is the treatment of choice for moderate-to-severe nasal symptoms that are continuous. The steroid acts to reduce inflammation that has occurred as a result of the allergen's action. Regular use is essential to obtain full benefit and treatment should be continued throughout the hay fever season. If symptoms of hay fever are already present, the patient needs to know that it is likely to take several days before the full treatment effect is reached.

Dryness and irritation of the nose and throat, as well as nosebleeds, have occasionally been reported; otherwise, side effects are rare. *Beclometasone, budesonide, fluticasone* and *mometasone nasal sprays* can be provided OTC to patients over 18 years of age for up to 3 months. They should not be recommended for pregnant women or for anyone with glaucoma.

Patients are sometimes alarmed by the term 'steroid', associating it with potent oral corticosteroids and possible side effects. Therefore, the pharmacist needs to take account of these concerns in explanations about the drug and how it works.

Sodium cromoglicate

Sodium cromoglicate is available OTC as nasal drops or sprays and as eye drops. *Cromoglicate* can be effective as a prophylactic if used correctly. It should be started at least 1 week before the hay fever season is likely to begin and then used continuously. There seem to be no significant side effects, although nasal irritation may occasionally occur.

Cromoglicate eye drops are usually highly effective in the treatment of eye symptoms that are not controlled by antihistamines and work very quickly (within an hour). However, *cromoglicate* should be used continuously to obtain full benefit. The eye drops should be used four times a day. These drops contain the preservative *benzalkonium chloride*, which is occasionally associated with allergy. Drops containing benzalkonium should not be used at the same time as wearing soft contact lenses as benzalkonium can be deposited on these lenses causing discolouration of the lenses, and sometimes eye irritation.

Barrier nasal sprays

Thixotropic gel nasal sprays are available; the theory is that a barrier is formed that prevents allergens reaching the nasal mucosa. Licensed as a medical device, there are only two small published studies and there is no definitive evidence of effect or lack of effect.

PRACTICAL POINTS

1. Car windows and air vents should be kept closed while driving. Otherwise, there can be a high pollen concentration inside the car. Some car ventilation and air-conditioning units will filter out pollen.
2. When house dust mite is identified as a problem, regular cleaning of the house to maintain dust levels at a minimum can help.

HAY FEVER IN PRACTICE

Case 1

A young man presents in late May. He asks what you can recommend for hay fever. On questioning, he tells you that he has not had hay fever before, but some of his friends have got it and he thinks he has the same thing. His eyes have been itching a little and are slightly watery, and he has been sneezing for several weeks. His nose has been runny and now feels quite blocked. He will not be driving. He is a student at the local sixth-form college and has exams coming up next week. He is not taking any medicines.

The pharmacist's view

This young man is experiencing the classic symptoms of hay fever for the first time. The nasal symptoms are causing the most discomfort; he has had rhinorrhoea and now has congestion, so it would be reasonable to recommend an OTC corticosteroid nasal spray, provided he is aged 18 years or over. If he is under 18 years, an oral antihistamine could be recommended, bearing in mind that he is sitting exams soon and so any preparation that might cause drowsiness is best avoided. His eyes are slightly irritated, but the symptoms are not very troublesome. You know that he is not taking any other medicines, so you could recommend *acrivastine, loratadine* or *cetirizine*, but advise him to 'try it out' for a few days in advance to make sure it does not cause drowsiness, if he is intending to use it at exam time. If the symptoms are not better in a week, he should see a doctor or nurse.

The doctor's view

As suggested, a corticosteroid nasal spray is likely to be effective for the symptoms of this young man and will not cause sedation. If he cannot use the OTC product because he is under 18 years, *acrivastine, loratadine* or *cetirizine* would be worth a try. Even though they are generally non-sedating, they can cause drowsiness in some patients and, as recommended by the pharmacist, the student should be advised not to take his first dose just before the exam. If his symptoms do not settle, then referral is appropriate. He may benefit from *sodium cromoglicate eye drops* if his eye symptoms are not fully controlled by the antihistamine. It is often worthwhile trying an older antihistamine as an alternative because some people are unaffected by the sedative properties, but this should only be done at a time when he is not taking exams, driving or operating machinery.

Case 2

A woman in her early 30s wants some advice. She tells you that she has hay fever and a blocked nose, and is finding it difficult to breathe. You find out that she has had the breathing symptoms for a few days and they have gradually got worse. She is not feverish and is otherwise well. She gets hay fever every summer, and it is usually controlled by *chlorphenamine* tablets that she buys every year and that she is taking at the moment. As a child, she suffered quite badly from eczema and is still troubled by it occasionally. She tells you that she has been a little wheezy for the past day or so, but she does not have a cough, and has not coughed up any sputum. She is not taking any other medicines.

The pharmacist's view

This woman has a previous history of hay fever, which has, until now, been dealt adequately with *chlorphenamine* tablets. Her symptoms have worsened over a period of a few days and she is now wheezing. As she is not feverish or feeling particularly unwell it seems unlikely that she has a chest infection, which could have been a possible cause of the symptoms. She should be referred to the GP surgery quickly since her symptoms suggest a more serious condition, such as asthma.

The doctor's view

This woman should be referred to her doctor's surgery to be seen urgently as she has shortness of breath. She almost certainly has seasonal asthma. In addition to the hay fever treatment recommended by her pharmacist, it is likely that she would benefit from a corticosteroid inhaler, such as *beclometasone*. She would be prescribed a beta-2-agonist, such as a *salbutamol inhaler*, as well to use for shortness of breath and wheeze. This consultation may be a complex one to manage in the usual 10 min available in view of the time required for information-giving, explanation about the nature of the problem, the rationale for the treatments and the technique of using inhalers. Many nurses in primary care specialise in asthma so seeing the nurse initially might be a better option. Clinical pharmacists in general practice can also provide this expertise.

RESPIRATORY SYMPTOMS FOR DIRECT REFERRAL

CHEST PAIN

Respiratory causes

A localised knife-like pain aggravated by breathing or coughing is a characteristic of pleurisy. It is usually caused by a respiratory infection and may be associated with an underlying pneumonia. Less commonly, pain of this sort may be caused by a pulmonary embolus (a blood clot that has lodged in a pulmonary artery after separating from a clot elsewhere in the circulation), and there may be a history of a swollen leg or immobility.

A pain similar to that experienced with pleurisy may arise from straining the muscles between the ribs following coughing. It may also occur with cracked or fractured ribs following injury or violent coughing. Another less common cause of pain is a pneumothorax where a small leak develops in the lung causing its collapse.

The area beneath the upper front part of the chest may be very uncomfortable in the early stages of acute viral infections that cause inflammation of the trachea (tracheitis). Viral flu-like infections can be associated with non-specific muscular pain (myalgia).

Non-respiratory causes

Heartburn

Heartburn occurs when the acid contents of the stomach leak backwards into the oesophagus (gullet). The pain is described as a burning sensation, which spreads upwards towards the throat. Occasionally, it can be so severe as to mimic cardiac pain.

Cardiac pain

Cardiac pain typically presents as a tight, gripping, vice-like, dull pain that is felt centrally across the front of the chest. The pain may seem to move down one or both arms. Sometimes, the pain spreads to the neck. When angina is present, the pain is brought on by exercise and relieved by rest. When a coronary event, such as a heart attack (myocardial infarction), occurs, the pain is similar but more severe and prolonged. It may come on at rest. Usually, but not always, the patient feels very unwell with sweating, nausea and vomiting, and there may be shortness of breath.

Anxiety

Anxiety is a commonly seen cause of chest pain in general practice. The pain probably arises as a result of hyperventilation. Diagnosis can be difficult as the hyperventilation may not be obvious.

SHORTNESS OF BREATH

Shortness of breath may be a symptom of a cardiac or respiratory disorder. Differential diagnosis can be difficult. It is usually a sign of a serious condition, although it can be due to anxiety.

Respiratory causes

Asthma

Occasionally, asthma may develop in later life, but the onset is most commonly seen in young children or young adults. The breathlessness is typically associated with a wheeze that gets worse with exercise or can be precipitated by exercise, although in mild cases, the only symptom may be a recurrent nocturnal cough. Most people with asthma have normal breathing between attacks. The attacks are often precipitated by viral infections, such as colds. Some are worse in the hay fever season, while others are aggravated by animal fur or dust. The breathlessness is often worse at night.

COPD (chronic bronchitis or emphysema)

COPD (chronic bronchitis or emphysema) is usually caused by years of cigarette smoking and gives rise to shortness of breath, especially on exertion, with a productive cough. The lung damage causing breathlessness is irreversible. When it is very severe, the patient may be breathless at rest. The breathing often worsens when an infective episode develops. At such times, there is also an increase in sputum production and the sputum may be coloured or purulent (like pus). If there is a sudden deterioration in symptoms, or an infective exacerbation is suspected, referral is appropriate.

COVID-19

A well-recognised important diagnostic feature of COVID-19 is that it can cause prolonged shortness of breath due to inflammation of the lung and airways.

Cardiac causes

Heart failure

Heart failure may develop gradually or present acutely as an emergency (usually in the middle of the night). The former (congestive cardiac failure) may cause breathlessness on exertion. It is often associated with ankle swelling (oedema) and is most common in the elderly. The more sudden type is called acute left ventricular failure. The victim is woken by severe shortness of breath and has to sit upright. There is often a cough present with clear frothy sputum (sometimes bloodstained). In such cases, the patient is very unwell and distressed.

Other causes

Hyperventilation syndrome

Hyperventilation syndrome occurs when the rate of breathing is too high for the bodily requirements. Paradoxically, the subjective experience is that of breathlessness. The sufferer complains of difficulty in taking in a deep breath. The experience is frightening but usually harmless. It may be associated with other symptoms, such as tingling in the hands and feet, numbness around the mouth, dizziness and various muscular aches. In many cases, it is due to anxiety.

WHEEZING

Wheezing is a high-pitched whistling sound that occurs during breathing, often described as ‘musical’. Wheezing sounds may be heard in the throat region in RTIs because of mucus in the large airways and are of little consequence. They are to be differentiated from wheezing emanating from the lungs where smaller airways contract and inflammation causes more narrowing and impaired airflow. In this latter situation, there is usually some difficulty in breathing.

Viral-induced wheeze in children

Wheezing often occurs in infants with viral respiratory infections and may go on for several weeks. This is called viral-induced wheeze (in the past it was often called wheezy bronchitis). The infection is usually self-limiting, but the condition requires accurate diagnosis to exclude asthma. It may also be confused with croup (laryngotracheitis) or bronchiolitis. It often occurs again when there is a further viral respiratory infection; the main distinctions from asthma are that symptoms settle completely between episodes, there is no wheeze on exercise and wheeze is not triggered by other things, such as allergy to pets. Some children who have a history of recurrent viral-induced wheeze develop asthma in the future, but most will stop wheezing as they get older.

Asthma

Wheezing is a common feature of asthma and accompanies the shortness of breath. However, in very mild asthma, it is not obvious and may present with just a cough. At the other extreme, an asthma attack can be so severe that so little air moves in and out of the lungs, there is no audible wheeze.

Cardiac

Wheezing may be a symptom associated with shortness of breath in heart failure.

Sputum

Sputum may be described as thick or thin and clear or coloured. It is a substance coughed up from the lungs and is not to be confused with saliva or nasal secretions. It may have a green tinge in people with asthma, but this does not signify infection.

COPD

Clear, thick sputum may be coughed up in COPD or by regular cigarette smokers. It may have a mucoid (jelly-like) nature and may be described as white, grey or clear with black particles. People with COPD are prone to recurrent infective exacerbations during which sputum production increases and turns yellow or green, or purulent (pus-like).

Pneumonia

Coloured mucoid (jelly-like) sputum may be present in other lung infections, such as pneumonia. Rust-coloured sputum is a characteristic of pneumococcal (lobar) pneumonia. Usually, it is associated with severely ill people who have a high fever and sweats.

Cardiac

Clear, thin (serous) sputum may be a feature of heart failure (left ventricular failure). The sputum forms as a result of pulmonary oedema, which characteristically awakens the patient in the night with shortness of breath. In such cases, it may have a red tinge or be bloodstained.

Haemoptysis

The presence of blood in sputum is always alarming. Small traces of blood can result from a broken capillary caused by coughing, which is harmless. The most common cause is RTI, which is usually self-limiting, but it can be a symptom of serious disease, such as lung cancer or pulmonary TB, and should always be referred for further investigation. Occasionally, blood is coughed up after a nosebleed and is of no consequence. Haemoptysis is rare in children and often only presents where bleeding is substantial, as children tend to swallow rather than expectorate their sputum.

Note: The Cochrane review resources do not have a date as these are often updated. The most up-to-date version should be consulted.

Respiratory problems	**Clinical Knowledge Summaries (CKS) (`https://cks.nice.org.uk`)**	**NHS Health A-Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Coughs and colds	☑	☑		• Cochrane review: vitamin C for preventing and treating the common cold • Cochrane review: saline nasal irrigation for acute upper respiratory tract infections
Cough	☑	☑	• Cough (acute): antimicrobial prescribing. NICE guideline [NG120].	• Butler, C., Kelly, M.J., Hood, K. *et al.* (2011). Antibiotic prescribing for discoloured sputum in acute cough/lower respiratory tract infection. *Eur Respir J* 38: 119–125 • Cochrane review: antibiotic treatment for people with a clinical diagnosis of acute bronchitis • Cochrane review: over-the-counter (OTC) medications for acute cough in children and adults in community settings

(*Continued*)

Respiratory problems	**Clinical Knowledge Summaries (CKS) (`https://cks.nice.org.uk`)**	**NHS Health A-Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Sore throat	☑	☑	• Sore throat (acute): antimicrobial prescribing. NICE guideline [NG84]	• Little, P., Hobbs, F.D., Moore, M. *et al.* (2013). Clinical score and rapid antigen detection test to guide antibiotic use for sore throats: randomised controlled trial of PRISM (primary care streptococcal management). *BMJ* 347: f5806
Sinusitis	☑	☑	• Sinusitis (acute): antimicrobial prescribing. NICE guideline [NG79].	• Cochrane review: antibiotics for clinically diagnosed acute rhinosinusitis in adults • Fokkens, W., Floffmans, R. and Thomas, M. (2014). Avoid prescribing antibiotics in acute rhinosinusitis. *BMJ* 349: g5703
AOM	☑ Ear infections	☑	• Otitis media (acute): antimicrobial prescribing. NICE guideline [NG91].	• Cochrane review: antibiotics for acute middle ear infection (acute otitis media) in children

Allergic rhinitis (hay fever)	☑		☑	
Respiratory symptoms for direct referral	☑			• Suspected cancer: recognition and referral. NICE guideline [NG12].

CHAPTER 2

COVID-19 and Long-COVID

COVID-19

Some key facts and advice

Origin and spread

- Coronavirus disease (COVID-19) is caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that emerged in China in late 2019.
- The infection spread rapidly to other countries. In March 2020, the World Health Organization (WHO) advised that the situation had become a pandemic (an outbreak of a disease that has spread across several countries or continents).
- The United Kingdom (UK) went into the first ‘lockdown’ on 23 March 2020.
- COVID-19 infects the upper and lower respiratory tracts. The virus is mainly spread by fine aerosol droplets released by a COVID-19 infected person while sneezing and coughing; these droplets can be inhaled by other people nearby, resulting in spreading infection to those people as well.
- Some transmission occurs by transfer of the virus from contaminated hard surfaces or contact with the skin of infected people. This transfers from the hands to the mouth or the eyes. The virus can survive on hard surfaces for up to 72 h and for several hours on the skin. It survives longer than the cold or flu virus.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
© 2023 John Wiley & Sons Ltd. Published 2023 by John Wiley & Sons Ltd.
Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

- Since the emergence of SARS-CoV-2, a number of different variants have been identified with differences in their transmissibility and virulence.
- With the variant causing ‘the first wave’ of the pandemic (subsequently called the Alpha variant), the prodrome (pre-illness phase) lasted between 2 and 10 days. The infection most usually became apparent in around 5 days. It is now known that different variants vary in the length of the prodrome and duration of infectivity.
- Many people can carry the virus and spread it but have no symptoms.
- With the Alpha variant, people with COVID-19 could infect others for up to 10 days. It was found that some patients with more severe disease could harbour the virus for much longer. With the Omicron variant most transmission occurs within 5 days of infection.

Symptoms

- The most common symptoms attributed to the Alpha variant in the ‘first wave’ of the pandemic were: fever, a new and continuous cough, shortness of breath, fatigue, loss of appetite, anosmia (loss of smell) and ageusia (loss of taste).
- In some people, taste was changed or disturbed (dysgeusia).
- Other symptoms seen with most variants include headache, tiredness and exhaustion, muscle pain, sore throat, nasal congestion, chest pain, loss of appetite, nausea and vomiting, diarrhoea and skin rashes (especially in younger people).
- Delirium and reduced mobility can appear in the elderly and immunocompromised people, often in the absence of fever.
- Studies of the Omicron variant – the predominant variant in the UK at the time of writing this chapter – identify the most common symptoms as runny nose, fatigue, sore throat, headache and sneezing (in order of frequency).
- The illness is variable in severity, from asymptomatic to mild respiratory infection in some people, to severe pneumonia in others.
- The mortality rate is estimated to be around 1%. This varies according to the prevalent variant and people’s immunisation status.
- The mortality rate is higher in more clinically vulnerable people.

Patients who are more at risk

The following lists are not inclusive and are subject to change. The most up to date list and guidance for managing suspected COVID-19 in the highest risk patients is availably on the NHS website in England (`www.nhs.uk`) or equivalent sites for Scotland, Wales and Northern Ireland. Most of these people will be eligible for antiviral therapy or antibody therapy if they have symptoms and test positive for COVID-19.

The treatment should be started as quickly as possible to reduce the risk of becoming seriously ill.

- People at high risk from coronavirus include those who:
  - Have had an organ transplant
  - Are having chemotherapy or antibody treatment for cancer, including immunotherapy
  - Are having an intense course of radiotherapy (radical radiotherapy) for lung cancer
  - Are having targeted cancer treatments that can affect the immune system (such as protein kinase inhibitors or poly adenosine diphosphate-ribose polymerase [PARP] inhibitors)
  - Have blood or bone marrow cancer (such as leukaemia, lymphoma or myeloma)
  - Have had a bone marrow or stem cell transplant in the past 6 months, or are still taking immunosuppressants
  - Have been told by a doctor that they have a severe lung condition (such as cystic fibrosis, severe asthma or severe chronic obstructive pulmonary disease [COPD])
  - Have a condition that means they have a very high risk of getting infections (such as severe combined immunodeficiency [SCID] or sickle cell)
  - Are taking medicine that makes them much more likely to get infections (such as high doses of steroids or immunosuppressants)
  - Have a serious heart condition and are pregnant
- People at moderate risk from coronavirus include those who:
  - Are aged 70 years or over
  - Have a lung condition that is not severe (such as asthma, COPD, emphysema or bronchitis)
  - Have heart disease (such as heart failure)
  - Have diabetes
  - Have chronic kidney disease
  - Have liver disease (such as hepatitis)
  - Have a condition affecting the brain or nerves (such as Parkinson's disease, motor neurone disease, multiple sclerosis or cerebral palsy)
  - Have a condition that means they have a high risk of getting infections
  - Are taking medicine that can affect the immune system (such as low doses of steroids)
  - Are very obese (with a body mass index [BMI] of 40 or above)
  - Are pregnant

Men have roughly twice the risk of more severe disease and death than women.

Ethnicity and risk in the UK

- An analysis of survival among confirmed COVID-19 cases from ‘the first wave’ of the pandemic showed that, after accounting for the effect of sex, age, deprivation and region:
    - People of Bangladeshi ethnicity had around twice the risk of death when compared with people of White British ethnicity.
    - People of Chinese, Indian, Pakistani, other Asian, Caribbean and other Black ethnicity had between 10% and 50% higher risk of death than White British people.

Complications

- Complications of COVID-19 vary according to the variant of SARS-CoV-2 in circulation. In the first wave, when the Alpha variant was predominant, they included:
    - Acute respiratory failure – reported in 8% of patients in a case series. This was the leading cause of mortality in patients with COVID-19
    - Venous thromboembolism – occurred in 16% of patients in a large study conducted in New York during ‘the first wave’, 20–31% of patients with severe COVID-19 in intensive care and 46–85% in other studies
    - Cardiovascular complications – most commonly heart failure, myocardial injury (5–31% of patients), arrhythmias and acute coronary syndrome
    - Acute kidney injury – overall incidence is approximately 11%
    - Acute liver injury – the pooled prevalence of hepatic manifestations on admission includes elevated alanine aminotransferase (26.6%), elevated aspartate aminotransferase (37.2%), decreased albumin (45.6%) and elevated total bilirubin (18.2%)
    - Neurological complications – reported in 36–57% of patients in a case series
    - Pancreatic injury – reported in 17% of patients in one case series
    - Septic shock – 4–8% of patients in a case series

WHAT TO DO IF COVID-19 IS SUSPECTED

- People who suspect they have coronavirus are advised not to attend their general practitioner (GP) practice or pharmacy, and instead contact the UK National Health Service (NHS) 111 online service, if their symptoms are sufficiently severe to warrant interaction with health services.
- Individuals who have a high temperature or do not feel well enough to work, or to do normal activities, are advised to stay at home and take extra care to avoid close contact with people who may be at serious risk from COVID-19.

- Guidance on self-isolation is subject to change and may be amended according to the variant of SARS-CoV-2 in circulation. National guidance should be followed.

Advice: managing symptoms at home

- If people are unable to self-care, have severe symptoms or are immunosuppressed, the advice is to contact the NHS 111 online for telephone assessment.
- Most people have a mild infection that can be treated at home.
- They should be advised to rest and avoid strenuous activity.
- People should be advised to drink fluids regularly to avoid dehydration, and that fluid intake needs may be higher than usual in cases of fever. Alcohol consumption should be discouraged as it may contribute to dehydration and there is an increased risk of liver damage in COVID-19.
- The National Institute for Health and Care Excellence (NICE) advises that people with cough should avoid lying on their backs, if possible, because this may make coughing less effective in clearing mucus. They should lie on their side or sit upright instead.
- Some of the medications and treatments used to treat colds and flu will also help with coronavirus symptoms. Cough medicines or cough suppressants can help reduce cough. Throat lozenges and remedies, such as honey and lemon, may improve a sore throat. Patients are advised to contact a pharmacist for advice about these, but not go to the pharmacy.
- For more severe cough symptoms, NICE advises to consider short-term use of *codeine linctus*. A doctor may prescribe *codeine phosphate* tablets or *morphine sulphate* oral solution in people aged 18 years and over to suppress coughing if it is distressing. Specialist advice is required for people under 18 years of age.
- Antibiotics are ineffective for most patients and should be avoided if possible to reduce problems arising from antimicrobial resistance. They may have a role if patients develop a secondary bacterial pneumonia, but this decision would most likely be made in the context of patients who have been hospitalised.
- Advise people to take *paracetamol* or *ibuprofen* if they have fever, headache or aches and pains. Tell them to continue only while both the symptoms of fever and the other symptoms are present.
- Reversible causes of breathlessness need to be identified and managed by the patient's GP or by the hospital, e.g. pulmonary oedema, pulmonary embolism, chronic obstructive pulmonary disorder and asthma.
- Patients with asthma or COPD, or those with other respiratory conditions, may benefit from using a pulse oximeter to self-monitor. They may also be of value in those people who are at high or moderate risk of complications from COVID-19 (see lists in the earlier text). It is important that an accredited device is used. If the oxygen level starts to fall, or dips below 91%, the patient should seek urgent advice from a healthcare professional.

- Shortness of breath can be distressing, but there is no specific treatment for use at home. Patients can be advised to try a number of things if they feel breathless:
    - Try to keep your room cool. Try turning the heating down or opening a window.
    - Try breathing slowly in through the nose and out through your mouth, with the lips together like gently blowing out a candle.
    - Sitting upright in a chair.
    - Relaxing the shoulders and not 'hunching'.
    - Leaning forward slightly – support yourself by putting your hands on your knees or on something stable, such as a chair.
    - Try not to panic if you are feeling breathless. This can make it worse.
- Patients are advised to get advice from NHS 111 or a GP if:
    - They are feeling gradually more unwell or more breathless.
    - They have difficulty breathing when they stand up or move around.
    - They feel very weak, achy or tired.
    - They are shaking or shivering.
    - Thy have lost their appetite and are not eating.
    - They cannot care for themselves – for example, tasks, such as washing and dressing or making food, are too difficult to perform.

Red flags for urgent care

Patients are advised to go to an accident and emergency (A&E) department immediately or call 999 if:

- They are so breathless that they are unable to say short sentences when resting.
- Breathing has got suddenly worse.
- They are coughing up blood.
- They are feeling cold and sweaty, with pale or blotchy skin.
- There is a rash that looks like small bruises or bleeding under the skin and does not fade when rolling a glass over it.
- If there is collapse or faint.
- They are feeling highly agitated, confused or very drowsy.
- Urination has stopped or is much less than usual.

Prevention of transmission

See also section on 'Coughs and Colds' in Chapter 1 on Respiratory Problems.

- Experience with COVID-19 has shown that the wearing of a face mask covering the nose and mouth reduces transmission. Current guidance on wearing a face mask should be followed.

- Keeping a distance from other people as much as possible is also a reasonable precaution.
- Ventilation has proved important by opening windows, doors and air vents whenever this can be done.
- Routine handwashing with soap and water for at least 20 s (the advice is for the time taken to sing happy birthday twice) kills the virus and reduces the transmission of COVID-19.
- Ethanol-based hand sanitisers can be used if immediate access to soap and water is difficult in everyday settings. SARS-CoV-2 is susceptible to alcohol in formulations of greater than 60% ethanol.
- Hand sanitisers are widely used in healthcare environments, and since the COVID-19 pandemic, use is now commonplace in shops and domestic settings too, and this can contribute to reducing transmission of all respiratory viruses.
- People should be advised not to touch their eyes, nose or mouth if their hands are not clean, but touching the face is a normal, regular habit and may be difficult to suppress.
- People should use tissues to cover their mouth and nose when coughing or sneezing and should put used tissues in a bin as soon as possible.
- Although the evidence on prevention of transmission using COVID-19 vaccination is unclear, and probably varies with different variants of SARS-CoV-2 virus, it does provide some protection against catching the virus. It is also clear that vaccination prevents serious complications of COVID-19. All people who are eligible should be encouraged to keep up to date with the recommended vaccine schedules.

LONG-COVID – CONTINUING SYMPTOMS AFTER COVID-19 INFECTION

COVID-19 is now recognised as a multi-organ disease and up to one in five people who test positive for COVID-19 experience symptoms for 4 weeks or more. Long-COVID is a new condition and our understanding of it is evolving. Its development is not predicted by initial COVID-19 severity and the burden of illness that is gradually being revealed includes many people who had mild to moderate infections. Patients who had severe disease and were hospitalised are also likely to have aggravation of their pre-existing conditions, such as heart or lung disease. It is thought that asymptomatic patients may also develop long-COVID, but this is currently less clear. Patients of all ages are affected and there is growing evidence of long-COVID in children. At the time of writing this chapter, an estimated 1.7 million patients are living with long-COVID in the UK and a typical community pharmacy will have 100 affected patients.

NICE has defined three stages of COVID-19:

- Acute COVID-19 infection – signs and symptoms of COVID-19 for up to 4 weeks

- Ongoing symptomatic COVID-19 – signs and symptoms of COVID-19 present from 4 weeks and up to 12 weeks
- Post-COVID-19 syndrome – signs and symptoms that develop during or after an infection consistent with COVID-19, present for more than 12 weeks and are not attributable to alternative diagnoses

Assessing patients

The symptoms that can be attributed to acute COVID-19 infection are still being determined, and although the effects are increasingly recognised, people living with medium- and long-term effects often report experiencing misunderstanding and even scepticism from relatives, friends, colleagues and employers. Patients may have a single or multiple symptoms, which may be constant, transient or fluctuating, and can change in nature over time. Some clues to possible causation have been identified through research and there is some evidence that long-COVID might involve an active disease process, with immunological evidence of continued inflammatory responses, lingering viral activity and/or blood clotting disorders.

Listening carefully to patients is an important part of tackling potential biases against long-COVID, and also can avoid inequality in access to healthcare and subsequent differences in health outcomes. Asking about the nature, severity, timing and duration of symptoms will help the pharmacist's decision-making. It is also useful to understand what experience patients have had with acute symptoms, and the severity of their condition; did they require a stay in hospital, which may have been a traumatic experience, for example.

NICE, the Scottish Intercollegiate Guidelines Network (SIGN) and the Royal College of General Practitioners (RCGP) have developed the 'COVID-19 rapid guideline: managing the long-term effects of COVID-19'. This 'long-COVID' guideline will be reviewed as new evidence emerges and clinical experience develops, and is being described as a 'living' guideline.

Common symptoms

The most common symptoms are fatigue and shortness of breath, but many other symptoms are also recognised and the list has been growing. Cognitive dysfunction, wheeze, inappropriate tachycardia and gastrointestinal disturbance are also frequently reported as symptoms of long-COVID. 'Brain fog' is commonly reported and its effects can be debilitating, especially for those whose jobs involved working at home on a computer, and in those who find it difficult to focus, or experience headaches. The main symptoms reported in the NICE guideline are shown in Box 2.1.

Box 2.1 Adapted from NICE, SIGN and RCGP guidance

Commonly reported post-acute COVID-19 symptoms				
Respiratory	**Cardiovascular**	**Generalised**	**Neurological**	**Gastrointestinal**
Shortness of breath	Chest tightness	Fatigue	Cognitive impairment (‘brain fog’, loss of concentration or memory issues)	Abdominal pain
Cough	Chest pain	Fever	Headache	Nausea
	Palpitations	Pain	Sleep disturbance	Diarrhoea
			Pins and needles and numbness	Anorexia and reduced appetite (in older people)
			Dizziness	
			Delirium (in older people)	
Musculoskeletal	**Psychological/ psychiatric**	**Ear, nose and throat**	**Dermatological**	
Joint pain	Symptoms of depression	Tinnitus	Skin rashes	
Muscle pain	Symptoms of anxiety	Earache		
		Sore throat		
		Loss of taste and/or smell		

WHEN TO REFER

Some complications of COVID-19, which can occur even in patients who self-managed at home (i.e. are not just complications seen in those requiring hospital care) are lung damage, myocarditis (inflammation of heart muscle) and postural hypotension, and these will be expected to cause protracted symptoms. However, other unrelated diseases may also surface (such as coronary heart disease and diabetes). Where a patient with significant symptoms has not already seen or spoken with their GP, you should advise them to do so. It appears that some patients are reluctant to bother their GP, as they perceive them to be too busy trying to catch up with patients who may have cancer or other serious conditions.

Long-COVID patients with lung or cardiac symptoms may be given heart-rate monitors or pulse oximeters to monitor their blood oxygen levels, for use at home, and may be asked to send the information to their GP between appointments. Guidelines recommend that patients who have continuing respiratory symptoms and have not already had an X-ray are sent for one 12 weeks after having acute COVID-19, and this may be a reason why referral is needed. Blood tests may be indicated. Investigations will depend on the range of symptoms experienced.

Red flags for urgent referral include:

- Severe or worsening shortness of breath
- Low oxygen saturation (≤91% at rest) or desaturation on exertion
- Unexplained chest pain
- Severe dizziness or syncope on exertion
- Palpitations or tachycardia at rest or on minimal exertion
- Focal weakness (e.g. of the face or an arm, or a leg)
- New confusion or expressive dysphasia (unable to speak coherently)

LONG-COVID CLINICS

Arrangements differ, but in many areas, there are now long-COVID clinics with a multidisciplinary team and offering both physical and psychological assessments. The pharmacy can establish where the nearest services are and signpost the patient to them. Depending on location, patients may face a long waiting list or might be outside the catchment area of a clinic. They may also have to be sent for a series of tests before they are able to access a clinic consultation which may require a consultation at the GP surgery.

PRACTICAL POINTS

Advice on recovery

It is impossible to predict how long full recovery will take and NICE states that self-management and 'time' will be the mainstay of treatment for many of the symptoms of long-COVID. Experience of post-viral effects from other viruses suggests that many symptoms should go within 3 months, but that tiredness may last longer (beyond 6 months). Some long-COVID patients are now known to still experience fatigue after 12 months.

Increasing activity

Much of the advice on rehabilitation and recovery, both physical and mental, involves slow or graduated steps to increase activity. The pharmacist can provide support and encouragement in this process. Fatigue and breathlessness may preclude what were previously normal everyday tasks such as carrying shopping bags and gardening. Not overdoing things and a gradual self-paced progression are key. Accepting temporary limitations on physical activities is important, as attempts to do too much too soon may exacerbate symptoms and create feelings of helplessness. Building in some time for relaxation is important and the use of relaxation videos and audio can help patients learn or relearn how to relax.

Patients may feel unsure of how and when to return to physical activity and whether it will be safe. Some patients may already have tried to restart their usual exercise and found they could not. A cautious approach is needed and activity reduced if fever, breathlessness, severe fatigue or muscle aches are experienced. The good news is that even brief periods of activity are effective for improving health. Household and garden tasks all contribute and gradual participation in walking can be a place to start. Using a simple record such as the one produced by the Chartered Society of Physiotherapy provides both goal setting and recording of progress (for example, number of steps walked). Evidence shows that increasing physical activity gradually after coronavirus infection is safe and important.

- Start small and build gradually. Do not expect your body to do what it used to be able to do immediately.
- Try not to compare yourself to how you were before you were ill – instead, compare yourself to how you were last week.
- Pace yourself. Do not expect to return immediately to your normal levels of activity. It will take time to build up.
- Your recovery will be up and down – there will be better days and worse days, so try not to feel down on the bad ones.

Source: Moving Medicine website: COVID Recovery Tips.

Shortness of breath and breathing control

Shortness of breath is common and patients often describe having to stop to ‘catch’ their breath when doing a task or activity that they used to be able to do with ease such as walking on the flat. They may feel that breathing is harder work than normal and that their shoulders are going up and down as they breathe. This is because normally about three quarters of the work of breathing is done by the diaphragm. Diaphragmatic movement may be lessened after illness such as COVID-19, necessitating more use of neck and shoulder muscles in breathing. This in turn results in shallower breathing that uses more energy and thus increases fatigue and breathlessness. A practical tip when this happens is to try wiping a cool wet flannel across the nose and upper cheeks because cooling the face, especially around the nose, can often help reduce the feeling of breathlessness.

Breathing techniques are known to improve the sensation of breathlessness and one that is recommended by the NHS is ‘breathing control’. This simple measure can easily be explained to a patient and will help them to control their breathing when they are moving around and also help recovery after physical activity. Its aim is to restore and normalise breathing patterns and to increase the efficiency of the respiratory muscles (including the diaphragm). Energy expenditure becomes lower, there is less airway irritation, fatigue is improved and breathlessness improves. The technique helps the patient to breathe gently with the least amount of effort. Breathing control can be used throughout the day, in 5–10-min bursts (or longer if the patient finds it helpful).

Advise the patient to practise while they are sitting down in a supported position, so they can get used to the technique and gradually master it:

- Put one hand on your chest and the other on your tummy. Keep your shoulders relaxed.
- Slowly breathe in and out through your nose, with your mouth closed. If this is too hard, breathe in through your nose and out through your mouth. If you are relaxed, the air will reach low in your lungs. Your tummy will move out against your hand. If your breathing is controlled, the hand on your chest will hardly move.
- When you breathe out, your tummy will fall gently. Imagine all the tension in your body leaving as you let the air out.
- Make your out-breaths twice as long as your in-breaths.
- With every breath out, try to feel more relaxed and calm. Gradually try to breathe more slowly.
- When you are able to do this easily while sitting down, try and then use this technique when you are active.

Vitamins and supplements

NICE advises, ‘Explain to people that it is not known if over-the-counter vitamins and supplements are helpful, harmful or have no effect in the treatment of new or ongoing symptoms of COVID-19’. The NHS COVID recovery website advises that patients who are eating less than they used to or are finding that they cannot eat a sufficiently healthy diet, may wish to consider taking multivitamin and mineral supplements.

NICE advises not to offer a vitamin D supplement to people solely to prevent or to treat COVID-19, except as part of a clinical trial. They recommend following the government’s advice on vitamin D, which applies to everyone. In particular, NICE advises patients who spend most of their time indoors, are over 65 or have a darker skin tone, and thus may not make enough vitamin D, should consider taking a daily 10 µg (400 units) vitamin D supplement. Many people may have been spending more time indoors with the COVID-19 pandemic.

SOURCES OF SUPPORT FOR SELF-MANAGEMENT

A number of websites provide useful information on aspects of self-management. Some are written as if their content is only relevant to people who have been in hospital, but much of it is of wider value for all patients with long-COVID.

‘NHS Your COVID Recovery’ website, `https://www.yourcovidrecovery.nhs.uk/`, contains self-management advice and tips about the common symptoms both physical and mental (see Box 2.2).

Box 2.2 Your COVID Recovery topics

Your COVID Recovery symptom areas covered	
Effects on your body	**Effects on your mind**
Breathlessness	Managing fear and anxiety
Fatigue	Managing your mood and coping with frustration
Cough	Memory and concentration
Managing your oxygen	
Taste and smell	
Voice and swallowing	
Musculoskeletal, shoulder and back pain	

'Long-COVID Support' Facebook page is a private group both for patients with long-COVID and for people who are caring for someone with long-COVID. Healthcare professionals are discouraged from joining the group, but there is also an associated public page `https://www.facebook.com/LongCovidPage/` on which patients post their experiences and links to the results of newly published studies and reports on long-COVID, so is worth bookmarking as a useful resource.

SOCIAL PRESCRIBING – REDUCING LONELINESS AND ISOLATION

Before the pandemic, social prescribing was growing as a way to reduce social isolation and loneliness and increase community connections. Patients with long-COVID can be directed to social prescribing resources which may help with their rehabilitation. Community-based activities such as parkrun, lunch clubs and volunteering are components that increase social interaction. 'The National Academy for Social Prescribing' website provides information about local schemes and activities and you can find out about link workers in primary care in your area and how they can support long-COVID patients.

COVID-19 IN PRACTICE

Case 1

A man comes into the pharmacy asking for some cough medicine for his wife. He says that the medicine needs to be sugar-free, as his wife has diabetes. On listening to him further, he says she has developed a new persistent cough that keeps her awake at night. Her problem came on 3 days ago when she woke in the morning, complaining of being very achy all over and then became shivery and developed a high temperature and cough by the evening. Since then her temperature has gone up and down and she has not been well enough to get out of bed for very long; she also seems breathless. She takes *glipizide* and *metformin* for her diabetes, and he has been checking her glucose readings, which have all been between 8 and 11 mmol/l – higher than usual. The only other treatment she is taking is *atorvastatin*; she is not on any antihypertensives. She has had both COVID and flu immunisations. He tells you that she will be 70 next year.

The pharmacist's view

The history indicates either COVID-19 or flu. Asking about loss or distortion of taste and smell are useful questions, as these symptoms would suggest COVID-19. Immunisation against COVID-19 has been shown to reduce serious illness, hospitalisations and death among patients who are vulnerable. Nevertheless, it would be best for this woman to be assessed by a clinician. She has been ill for 3 days and has been mostly bedbound during this time. There are several features that suggest she might be at a higher risk of complications and she may be eligible for antiviral treatment. I would suggest that her husband asks for someone at the surgery to come out to see her. Alternatively, he should contact NHS 111. Sometimes people are reluctant to call for medical assessment, as they feel they might be 'bothering' the doctor unnecessarily. The pharmacist's support in making this decision is often helpful.

The doctor's view

The infection is likely to be COVID-19. We do see some more serious cases even in those that are immunised and no vaccine is 100% effective. She is in the higher-risk group for developing complications (age and diabetes), so it would be reasonable to advise referral to the GP or 111 service. These cases are usually managed by telephone triage initially to see if immediate admission to hospital is needed (see Box 2.3). Also she may be eligible for antiviral treatment which should be considered as early as possible to give greatest benefit. Most cases usually resolve within a week or so, but there is a concern that she might need oxygen or respiratory support and these need considering.

In this situation, a doctor, nurse or paramedic would want to assess the severity of her condition, check her chest for signs of infection and check her oxygen saturation. A persisting or worsening fever would point to a complication developing. Her husband would almost certainly have caught the infection by now, if susceptible, and may consider it necessary to isolate as a close contact.

Box 2.3 Signs and symptoms of COVID-19 which indicate need for urgent admission

The following signs and symptoms help identify people with COVID-19 with the most severe illness who need urgent admission:

- Severe shortness of breath at rest or difficulty breathing
- Reduced oxygen saturation levels measured by pulse oximetry (the threshold for concern is 91% or lower on air)
- Coughing up blood
- Blue lips or face
- Feeling cold and clammy with pale or mottled skin
- Collapse or fainting (syncope)
- New confusion
- Becoming difficult to rouse
- Reduced urine output

FURTHER READING AND RESOURCES

`https://www.nice.org.uk/guidance/conditions-and-diseases/infections/covid19` (accessed 25 February 2022)

The NHS must reconfigure services to manage enduring multimorbidity following covid-19. `https://www.bmj.com/content/373/bmj.n853` (accessed 25 February 2022)

COVID-19 Recovery Activity Planner (Source: Chartered Society of Physiotherapists) `https://www.csp.org.uk/media/1265833" https://www.csp.org.uk/media/1265833` (accessed 25 February 2022)

Long-Covid guidelines need to reflect lived experience `https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32705-7/fulltext` (accessed 25 February 2022)

Living with Covid19 – Second review (March 2021) `https://evidence.nihr.ac.uk/themedreview/living-with-covid19-second-review/` (accessed 25 February 2022)

CHAPTER 3

Gastrointestinal Tract Problems

MOUTH ULCERS

Recurrent aphthous mouth ulcers affect as many as one in five people and are classified as aphthous (minor or major) or herpetiform. More than three quarters of cases are due to self-limiting minor aphthous ulcers; which are not associated with systemic diseases and their cause is unknown. Causes of other types of ulcers include infection, trauma and drug allergy. Occasionally, mouth ulcers appear as a symptom of serious disease, such as cancer.

What you need to know

Age
    Child or adult
Nature of the ulcers
    Size, appearance, location and number
Duration
Previous history
Other symptoms
Medication

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
© 2023 John Wiley & Sons Ltd. Published 2023 by John Wiley & Sons Ltd.
Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Patients with aphthous ulcers may describe a history of recurrence, which began in childhood and has continued ever since. Minor aphthous ulcers are more common in women and occur most often between the age of 10 and 40 years.

Nature of the ulcers

Minor aphthous ulcers usually occur in crops of 1–5. The lesions may be up to 5 mm in diameter and appear as a white or yellowish centre with an inflamed red outer edge. They are painful, clearly defined, round or ovoid and shallow and confined to the mouth. Common sites are the tongue margin and insides of the lips and cheeks. The ulcers tend to last from 5 to 14 days.

Major aphthous ulcers are an uncommon severe variant of the minor ones, may be as large as 30 mm in diameter and can occur in crops of up to 10. Sites involved are the lips, cheeks, tongue, pharynx and palate. These ulcers are more common in sufferers of ulcerative colitis.

Herpetiform ulcers are a variant of aphthous ulcers. They present as multiple pinhead-sized ulcers that may fuse to form much larger, irregular-shaped ulcers and are very painful. In addition to the sites involved with aphthous ulcers, herpetiform ulcers may affect the floor of the mouth and the gums. These ulcers are called ‘herpetiform’ because the clinical appearance suggests a viral cause, but they are not caused by viral infection. Herpetiform ulcers usually last 10–14 days. Table 3.1 summarises the features of the three main types of aphthous ulcers.

TABLE 3.1 The three main types of aphthous ulcers

Minor	Major	Herpetiform
80% of patients	10–12% of patients	8–10% of patients
2–10 mm in diameter (usually 5–6 mm)	Usually over 10 mm in diameter; may be smaller	Pinhead sized
Round or oval	Round or oval	Round or oval; coalesce to form irregular shape as they enlarge
Uncomfortable, but eating is not affected	Prolonged and painful ulceration; eating may become difficult	May be very painful

Aphthous ulcers should not be confused with cold sores, which are caused by herpes zoster virus and are small blisters that usually develop on the skin and lips around the mouth (see Chapter 4: Skin Conditions: Cold sores). Cold sores often begin with a tingling, itching or burning sensation.

Systemic conditions, such as Behçet's syndrome and erythema multiforme, may produce mouth ulcers, but other symptoms would generally be present (see Other symptoms below).

Duration

Minor aphthous ulcers usually heal in less than 1 week, while major aphthous ulcers take 10–30 days. Fresh crops of herpetiform ulcers tend to appear before the original crop has healed, which may lead patients to think that the ulceration is continuous.

Oral cancer

Any mouth ulcer that has persisted for longer than 3 weeks requires immediate referral to the dentist or doctor because this may indicate serious pathology, such as cancer. Most oral cancers are squamous cell carcinomas, of which 1 in 3 affects the lip and 1 in 4 affects the tongue, often the under surface. The development of a cancer may be preceded by a premalignant lesion, including erythroplasia (red) and leucoplakia (white) or a speckled leucoplakia. Squamous cell carcinoma may present as a single ulcer with a raised and indurated (firm or hardened) border. It may be painless initially. Common locations include the lateral border of the tongue, the lips, floor of the mouth and the gingiva. The key point to raise suspicion would be a lesion that has lasted for several weeks or longer. Oral cancer is much more common in smokers than non-smokers.

Previous history

There is a family history of mouth ulcers in an estimated one in three cases. Minor aphthous ulcers often recur, with the same characteristic features of size, number, appearance and duration before healing. Their appearance may seem to follow trauma to the inside of the mouth or tongue, such as biting the inside of the cheek while chewing food. Episodes generally recur after 1–4 months. However, trauma is not always a feature of the history, and the cause of minor aphthous ulcers remains unclear despite extensive investigation.

Ill-fitting dentures may produce ulceration; if this is a suspected cause, the patient should be referred back to the dentist so that the dentures can be refitted. Another denture-related problem is candida infection (thrush). Often, this also involves redness, fissuring and soreness at the angle of the mouth (cheilitis). If this is suspected, *miconazole gel* can be supplied OTC to treat the infection (see Chapter 10: Childhood Conditions: Oral thrush (oral candidiasis)). It is suggested to advise hygiene measures that involve leaving the dentures out for at least 6 h in each 24-h period to promote healing of the gums. Sometimes, longer is needed. The dentures should be cleaned and then soaked in a disinfectant solution, e.g. *chlorhexidine*, overnight. The dentures can be soaked in any solution marketed to sterilise baby's bottles (provided the dentures contain no metal).

In women, minor aphthous ulcers often precede the start of the menstrual period. The occurrence of ulcers may cease after pregnancy, suggesting hormonal involvement. Stress and emotional factors at work or home may precipitate a recurrence or a delay in healing; however, these factors do not seem to be causative.

Deficiency of iron, folate, zinc or vitamin B12 may be a contributory factor in aphthous ulcers and may also lead to glossitis (a condition where the tongue becomes sore, red and smooth) and angular stomatitis (where the corners of the mouth become sore, cracked and red).

A systematic review found that toothpastes that do not contain sodium lauryl sulphate (SLS – a detergent used in toothpastes) were associated with a reduced number of minor aphthous ulcers, duration of ulcer, number of episodes, and ulcer pain; therefore changing the regular toothpaste to a SLS-free toothpaste may be helpful. Food allergy is occasionally the causative factor, and it is worth enquiring whether the appearance of ulcers is associated with any particular foods. Patients have reported that some foods, including chocolate, spicy foods, coffee, peanuts, almonds, strawberries, cheese, tomatoes and wheat flour, seem to be involved in ulcer production.

Other symptoms

The severe pain due to major aphthous or herpetiform ulcers may make it difficult for the patient to eat and weight loss may occur. Weight loss would therefore be an indication for referral.

In most cases of recurrent aphthous mouth ulcers, the disease eventually burns itself out over a period of several years. Occasionally, as in Behçet's syndrome, there is progression with involvement of sites other than the mouth. Most commonly, the vulva, vagina and eyes are affected, with genital ulceration and iritis.

Behçet's syndrome can be confused with erythema multiforme, although in the latter, there is usually a distinctive rash present on the skin. Erythema multiforme is sometimes precipitated by an infection or drugs (with *sulfonamides* being the most common).

Mouth ulcers may be associated with inflammatory bowel disease (such as ulcerative colitis or Crohn's disease) or coeliac disease. Therefore, if persistent or recurrent diarrhoea is present, referral is essential. Patients reporting any of these symptoms should be referred to their general practice (GP) surgery.

Rarely, ulcers may be associated with disorders of the blood, including anaemia, abnormally low white cell count or leukaemia. It would be expected that in these situations, there would be other signs of illness present and the sufferer would present directly to the doctor.

Medication

Mouth ulcers may be produced as a side effect of drug therapy. Drugs that have been reported to cause this problem include *aspirin* and other non-steroidal anti-inflammatory drugs (NSAIDs), cytotoxic drugs, *nicorandil*, *beta blockers* and *sulfasalazine*. Radiotherapy may also induce mouth ulcers. It is worth asking about herbal medicines because *feverfew* (which is used for treating migraine) has been known to cause mouth ulcers.

It would also be useful to ask the patient about any treatments tried either previously or on this occasion, and the degree of relief obtained from these. The pharmacist can then recommend an alternative product where appropriate.

When to refer

Duration of longer than 3 weeks
Associated weight loss
Ulcer suggestive of cancer
Involvement of other mucous membranes or eyes
Rash
Diarrhoea
Suspected adverse drug reaction

Treatment timescale

If there is no improvement after 1 week, the patient should see the doctor.

MANAGEMENT

Symptomatic treatment for aphthous ulcers can relieve pain and may reduce healing time. Patients may want to consider changing their toothpaste to one free from SLS and they can be advised to avoid trigger foods. Active ingredients in over-the-counter (OTC) products include antiseptics, corticosteroids and local anaesthetics. There is evidence from clinical trials to support use of topical corticosteroids and *chlorhexidine mouthwash*. Gels and liquids may be more accurately applied with the help of a cotton bud or cotton wool, provided the ulcer is readily accessible. Mouthwashes can be useful in cases where ulcers are difficult to reach. General practitioners (GPs) in England are advised not to routinely prescribe treatments for mouth ulcers as the ulcers are usually harmless and clear up within a week or two; the National Health Service (NHS) policy is that treatments for these should usually be purchased OTC.

Chlorhexidine gluconate mouthwash

There is some evidence that *chlorhexidine mouthwash* reduces duration and severity of ulceration. The rationale for the use of antibacterial agents is that secondary bacterial infection frequently occurs, which can increase discomfort and delay healing. *Chlorhexidine* helps to prevent secondary bacterial infection, but it does not prevent recurrence. It has a bitter taste and is available in peppermint as well as standard flavour. Regular use can stain teeth brown – an effect that is not usually permanent. Advising the patient to brush the teeth before using the mouthwash can reduce staining. The mouth should then be well rinsed with water as *chlorhexidine* can be inactivated by some toothpaste ingredients. The mouthwash should be used twice a day, rinsing 10 ml in the mouth for 1 min, and continued for 48 h after symptoms have gone away.

Topical corticosteroids

Hydrocortisone acts locally on the ulcer to reduce inflammation and pain, and is thought to shorten healing time (although evidence is weak). It is available as mucoadhesive buccal tablets (2.5 mg) for OTC use by adults and children over 12 years of age. A tablet is held in close proximity to the ulcer until dissolved. This can be difficult when the ulcer is in an inaccessible spot. One tablet is used four times a day. It should be explained that the tablet should not be sucked, but dissolved in contact with the ulcer. The patient should be advised that the treatment is best used as early as possible. Before an ulcer appears, the affected area feels sensitive and tingling – which is the prodromal phase – and treatment should start then. Corticosteroids have no effect on recurrence.

Local analgesics

Benzydamine mouthwash or *spray* and *choline salicylate dental gel* are short acting, but these can be useful in very painful ulcers. The mouthwash is used by rinsing 15 ml in the mouth three times a day.

Numbness, tingling and stinging can occur with *benzydamine*. Diluting the mouthwash with the same amount of water before use can reduce stinging.

The mouthwash is not licensed for use in children under 12 years of age. *Benzydamine spray* is used as four sprays onto the affected area three times a day, and it can be used in children for whom fewer sprays are advised (see product instructions). Choline salicylate gel is contraindicated in children under 16 years of age because of possible links with Reye's syndrome.

Local anaesthetics – lidocaine (lignocaine) and benzocaine

Local anaesthetic gels are often requested by patients. They are effective in producing temporary pain relief, but maintenance of gels and liquids in contact with the ulcer surface is difficult. Reapplication of the preparation may be done when necessary. Tablets and pastilles can be kept in contact with the ulcer by the tongue and can be of value when just one or two ulcers are present. Both *lidocaine* and *benzocaine* have been reported to produce sensitisation, but cross-sensitivity seems to be rare, probably because the two agents are from different chemical groupings. Thus, if a patient has experienced a reaction to one agent in the past, the alternative can be tried.

MOUTH ULCERS IN PRACTICE

Case 1

A man in his early 50s asks you to recommend something for painful mouth ulcers. On questioning, he tells you that he has two ulcers at the moment and has occasionally suffered from this problem over many years. Usually, he gets one or two ulcers on the insides of the cheek or lips, and they last for about 1 week. He is not taking any medicines and has no other symptoms. You ask to see the lesions and note that there are two small white patches, each with an angry-looking red border. One ulcer is located on the edge of the tongue and the other is on the inside of the cheek. The patient cannot remember any trauma or injury to the mouth and has had the ulcers for a couple of days. He tells you that he has used pain-killing gels in the past and they have provided some relief.

The pharmacist's view

Based on what the patient has told, it would be reasonable to assume that he suffers from recurrent minor aphthous ulcers. Treatment with *hydrocortisone mucoadhesive tablets* (one tablet dissolved in contact with the ulcers four times a day) or with a local anaesthetic or analgesic gel applied when needed would help to relieve the discomfort until the ulcers heal. The man should see his doctor if the ulcers do not completely heal within 3 weeks.

The doctor's view

This patient is most likely suffering from recurrent aphthous ulceration. As always, it is worthwhile enquiring about his general health, checking, in particular, that he does not have a recurrent bowel upset or weight loss. It may be a good opportunity to discuss smoking, and giving it up, if this is relevant. These ulcers can be helped by a topical steroid preparation.

Case 2

One of your counter assistants asks you to recommend a strong treatment for mouth ulcers for a woman who has already tried several treatments. The woman tells you that she has a troublesome ulcer under her tongue that has persisted for a few weeks. She has used some pastilles containing a local anaesthetic and an antiseptic mouthwash but there is no improvement. She smokes 20 cigarettes per day.

The pharmacist's view

This woman should be advised to see her doctor or dentist for further investigation. The ulcer has been present for several weeks, with no sign of improvement, suggesting the possibility of a serious cause.

The doctor's view

Referral is correct. It is likely that the doctor or dentist will refer her to an oral and maxillofacial surgeon for further assessment and probable biopsy as the ulcer could be malignant. Mouth cancer accounts for approximately 2% of all cancers of the body in Britain. It is most common after the sixth decade and is two times more common in men than women. Mouth cancer is frequently associated with smoking, including in pipe or cigar smokers. Chewing tobacco is also a risk factor. Mouth cancer is most often found on the tongue or lower lip. It may be painless initially.

Case 3

Jakub Babinski is a 59 year-old man who asks for advice about mouth ulcers that he has been suffering from. Until a few months ago, he had an occasional ulcer, but is now finding that no sooner has one healed than another one appears. Mr Babinski tells you he has started to keep a food diary. He thinks that some foods he has eaten for many years without problems are now causing mouth ulcers – so far strawberries and peanuts seem to be culprits. He has read that deficiency of vitamin B12 or iron can cause mouth ulcers and asks how he would know if this is causing the problem rather than specific foods.

The pharmacist's view

The foods that Mr Babinski mentions have been reported to be associated with minor aphthous ulcers in some people. I would ask him if he has noticed any other changes apart from the mouth ulcers. For vitamin B12 deficiency, I would be looking out for other signs, including a red, sore tongue (glossitis), disturbed vision, or pins and needles, and for iron deficiency, shortness of breath, unusual tiredness, dizziness and paleness. If any of these were present, I would advise seeing the GP. Sometimes, patients have dental problems and hence seeing a dentist might be advised. Otherwise, I would explore whether Mr Babinski has tried excluding any of the suspected foods, and would offer options for treating the ulcers, if and when they occur.

The doctor's view

The pharmacist has made a good assessment. It does look like these foods are the trigger for his aphthous ulcers. The common culprits are coffee, chocolate and peanuts. Some people get them in relation to wheat flour products due to gluten, even though they do not have coeliac disease. It would be worth not eating strawberries and peanuts and seeing if this condition settles. Another common problem is dental: I would assess Mr Babinski for the presence of local trauma as an underlying cause (e.g. from sharp and/or broken teeth, dentures and orthodontic appliances, and biting during chewing). If there are such problems, then a dentist should be able to help. If I see patients with recurrent aphthous ulcers of this type, I usually do blood tests, namely a complete blood count to rule out anaemia, and other tests to measure the levels of serum ferritin, folate and vitamin B12 to rule out deficiencies. Vitamin B12 deficiency is quite common; it is seen in as many as 20% of older people and is easily rectified – if it is diet related, oral cyanocobalamin tablets can be taken (pernicious anaemia usually requires injections). For symptom relief, hydrocortisone mucoadhesive buccal tablets work well.

HEARTBURN

Heartburn is a form of indigestion, or dyspepsia, which is also more formally known as gastro-oesophageal reflux disease (GORD). Symptoms are caused when there is reflux of gastric contents, particularly acid, into the oesophagus, which irritates the sensitive mucosal surface (oesophagitis). Patients will often describe a burning discomfort/pain felt in the stomach, passing upwards behind the breastbone (retrosternal).

What you need to know

Age
    Adult or child
Symptoms
    Heartburn
    Difficulty in swallowing
    Flatulence
Associated factors
Pregnancy
Precipitating factors
Relieving factors
Weight
Smoking habit
Eating
Medication
Medicines already tried
Other medicines being taken

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

The symptoms of reflux and oesophagitis occur more commonly in older people. Heartburn is not a condition normally experienced in childhood, although symptoms can occur in young adults and particularly in pregnant women (see Chapter 6: Women's Health: Common symptoms in pregnancy). Children with symptoms of heartburn should therefore be referred to their doctor.

Symptoms/associated factors

A burning discomfort is experienced in the upper part of the stomach in the midline (epigastrium), and the burning feeling tends to move upwards behind the breastbone (retrosternal). The pain may be felt only in the lower retrosternal area or occasionally right up to the throat, sometimes associated with an acid taste in the mouth.

Information about precipitating or aggravating factors should be obtained. These may exert their effect by directly irritating the oesophagus or by increasing the likelihood of reflux occurring.

Heartburn is often brought on by bending or lying down which are factors that increase pressure on the lower oesophageal sphincter and make leakage of acid up the oesophagus more likely. This is more likely to occur in those who are overweight and can be aggravated by a recent increase in weight. Heartburn is also more likely to occur after a large meal.

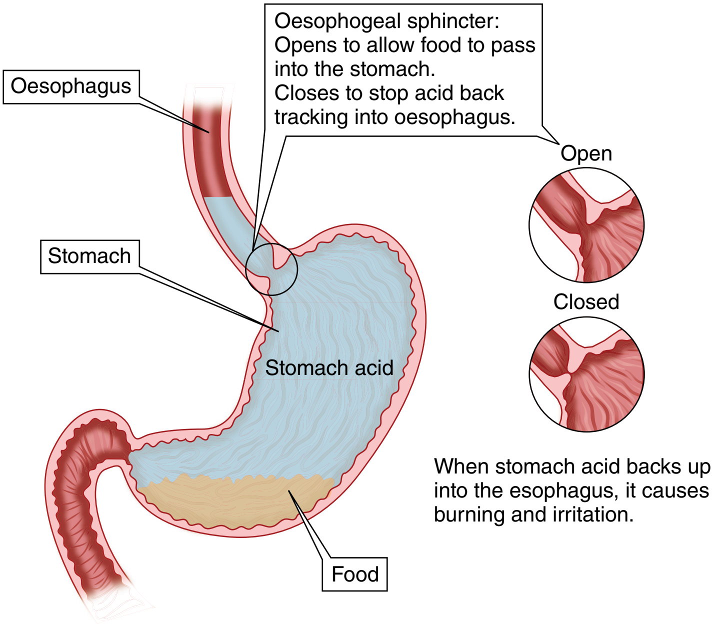

Oesophageal sphincter:
Opens to allow food to pass into the stomach.
Closes to stop acid back tracking into oesophagus.
Oesophagus
Open
Stomach
Closed
Stomach acid
When stomach acid backs up into the esophagus, it causes burning and irritation.
Food

FIGURE 3.1 Diagram of the oesophagus and stomach showing oesophageal sphincter.

Alcohol and smoking are known to cause or aggravate heartburn. Stress is also a factor.

Some medicines are commonly associated with heartburn and people may notice symptoms shortly after starting them. The main culprits are calcium channel blockers, such as *amlodipine*, antidepressants (particularly those with more pronounced antimuscarinic (anticholinergic) effects, such as *amitriptyline*), *theophylline*, nitrates, iron supplements and the phosphodiesterase inhibitors, such as *sildenafil* and *tadalafil*.

These types of drugs cause relaxation of the band of muscle at the lower end of the oesophagus, which normally acts as a sphincter, allowing food into the stomach, but stopping the acid contents of the stomach going up into the oesophagus when the stomach contracts. The lining of the stomach is resistant to the irritant effects of acid, whereas the lining of the oesophagus is readily irritated by acid. Caffeine in coffee, tea or soft drinks, such as cola, and in some analgesics and cold remedies also relaxes the lower oesophageal sphincter.

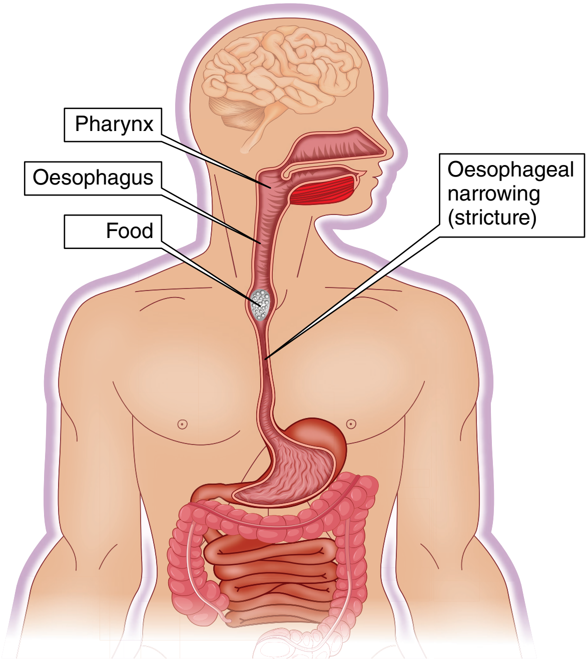
NSAIDs, such as *ibuprofen*, will make the inflammation in oesophagitis worse. *Aspirin* or oral corticosteroids (e.g. *prednisolone*) can also aggravate oesophagitis. Bisphosphonates (e.g. *alendronate* and *risedronate*), which are taken for treating osteoporosis, can cause severe oesophagitis; therefore, it is important that people drink water and stay upright after taking them.

Severe pain

Sometimes, the pain can come on suddenly and severely, and even radiate to the back and arms. In this situation, differentiation of symptoms is difficult as the pain can mimic a heart attack, and hence urgent medical referral is essential. Sometimes, patients who have been admitted to hospital apparently suffering a heart attack are found to have oesophagitis instead. For further discussion about causes of chest pain, see Chapter 1: Respiratory Problems: Respiratory symptoms for direct referral: Chest pain.

Difficulty in swallowing (dysphagia)

Difficulty in swallowing must always be regarded as a serious symptom. The difficulty may be either discomfort when food or drink is swallowed or a sensation of food or liquids sticking in the gullet. Both require referral (see 'When to refer' below). It is possible that the swallowing discomfort may be secondary to inflammation of the oesophagus (oesophagitis) due to acid reflux, especially when it occurs while swallowing hot drinks or irritant fluids (e.g. alcohol or fruit juice). A history of a sensation that food sticks as it is swallowed or that it does not seem to pass directly into the stomach is an indication for immediate referral. It may be due to obstruction of the oesophagus, e.g. by a tumour, or can result from severe oesophagitis with inflammation and narrowing (see Regurgitation below).



Causes of oesophageal dysphagia

Achalasia (disturbed motility)
Narrowing or blockage from:
- Cancer
- Radiotherapy
- Scar tissue from acid oesophagitis
- Scleroderma (thickening and fibrosis)
- Spasms

FIGURE 3.2 Diagram illustrating causes of dysphagia.

Regurgitation

Regurgitation can be associated with difficulty in swallowing and occurs when recently eaten food sticks in the oesophagus and is regurgitated without passing into the stomach. Due to a mechanical blockage in the oesophagus, regurgitation can be caused by a cancer as well as by less serious conditions, such as an oesophageal stricture due to oesophagitis; this is caused by long-standing acid reflux where the continual inflammation causes scarring. Scars contract and can therefore cause narrowing of the oesophagus. This can be treated by dilatation using a fibre-optic endoscope. However, medical examination and further investigations are necessary to determine the cause of regurgitation.

Pregnancy

As many as half of all pregnant women suffer from heartburn. This is covered in more detail in the section on Common symptoms in pregnancy of Chapter 6: Women's Health. Pregnant women aged over 30 years are more likely to suffer from this problem. The symptoms are caused by an increase in intra-abdominal pressure and incompetence of the lower oesophageal sphincter. It is thought that hormonal influences, particularly progesterone, are important in the lowering of sphincter pressure. Heartburn often begins in mid-to-late pregnancy, but may occur at any stage. The problem may sometimes be associated with stress.

Medication

The identity of any medication that has been tried to treat the symptoms should be established.

Any other medication being taken by the patient should also be identified to ascertain drugs that cause or aggravate the symptoms of heartburn (e.g. calcium channel blockers, antimuscarinics (anticholinergics), *theophylline*, nitrates, *caffeine* and phosphodiesterase inhibitors, as discussed earlier). NSAIDs, such as *ibuprofen* or *aspirin*, and oral corticosteroids, such as *prednisolone*, will aggravate indigestion and any oesophagitis caused by reflux. Bisphosphonates can also cause severe oesophagitis. If necessary, the patient should be advised to discuss these treatments with the prescriber.

Failure to respond to antacids and pain radiating to the arms could mean that the pain is not caused by acid reflux. Although acid reflux is still a possibility, other causes, such as ischaemic heart disease (IHD) and gall bladder disease, may have to be considered.

When to refer

Failure to respond to antacids
Related to prescribed medication
Pain radiating to the arms
Difficulty in swallowing
Regurgitation
Long duration and/or worsening over time
Increasing severity
Children
Aged 55 and over with 'alarm features'

National Institute for Health and Care Excellence (NICE) alarm features: Advice about when to consult the GP

- Adults presenting with dyspepsia or reflux symptoms should be advised to see their GP if their symptoms have persisted for several weeks, get worse over time or do not improve with medication.
- They should be advised to see their GP urgently if they have dysphagia or if they are aged 55 and over with additional symptoms that may be a cause for concern, including weight loss, haematemesis, nausea or vomiting, or upper abdominal pain.

Treatment timescale

Where no 'red flag' symptoms are present, and if symptoms have not responded to treatment after 2 weeks, the patient should see a doctor.

MANAGEMENT

The symptoms of heartburn respond well to treatments that are available OTC, and practical advice about measures to prevent recurrence is important. GPs in England are discouraged from prescribing medicines for heartburn as patients are encouraged to 'self-care' with OTC products. Pharmacists will use professional judgement to decide whether to offer antacids/alginates or a proton pump inhibitor (PPI) (*esomeprazole*, *omeprazole* or *pantoprazole*) as first-line treatment. The decision will also take into account the patient's preference.

Antacids

Antacids can be effective, more so in combination with an alginate. Choice of antacid can be made using the same guidelines as described in the section on Indigestion later in this chapter. Preparations that are high in sodium should be avoided by those who are pregnant and anyone on a sodium-restricted diet (e.g. those with heart failure or kidney or liver problems).

Alginates

Alginates form a raft that sits on the surface of the stomach contents and prevents reflux. Some alginate-based products contain *sodium bicarbonate*, which, in addition to its antacid action, causes the release of carbon dioxide in the stomach, enabling the raft to float on top of the stomach contents. If a preparation low in sodium is required, the pharmacist can recommend one containing *potassium bicarbonate* instead. Alginate products with low sodium content are useful for the treatment of heartburn in patients on a restricted sodium diet.

Proton pump inhibitors

Esomeprazole, *omeprazole and pantoprazole* can be provided OTC for the relief of heartburn symptoms associated with reflux in adults aged 18 and over. PPIs are generally accepted as being among the most effective medicines for the relief of heartburn. It may take a day or so for them to start being fully effective. During this period, a patient with ongoing symptoms may need to take a concomitant antacid. PPIs work by suppressing gastric acid secretion in the stomach. They inhibit the final stage of gastric hydrochloric acid production by blocking the hydrogen–potassium ATPase enzyme in the parietal cells of the stomach wall (also known as the proton pump). A single treatment can last up to 24 h or more.

Omeprazole is licensed OTC as 10-mg tablets and *esomeprazole* and *pantoprazole* as 20-mg tablets, and their doses are shown in the table below.

Strength and doses of OTC PPIs

	Strength (mg)	Daily dose (mg)
Esomeprazole	20	20
Omeprazole	10	20
Pantoprazole	20	20

Patients taking a PPI should be advised not to take H_2 antagonists (e.g. cimetidine) at the same time. The tablets or capsules should be swallowed whole with plenty of liquid prior to a meal. It is important that the tablets are not crushed or chewed. Alcohol and food do not affect the absorption of PPIs. OTC treatment can be taken for up to 2 weeks, and the patient can stop it before the said period if they are symptom free.

- If no relief is obtained within 2 weeks, the patient should be referred to the GP surgery.
- PPIs should not be taken during pregnancy or while breastfeeding.
- Headache, nausea and occasional vomiting are reported.
- Diarrhoea is a common side effect, and constipation is sometimes seen.
- Treatment with PPIs may cause a false-negative result in the 'breath test' for *Helicobacter pylori*.

PRACTICAL POINTS

Advice on lifestyle and avoiding precipitants

A summary of lifestyle advice for heartburn is given below. Encourage the person to:

- Lose weight if they are overweight or obese.
- Avoid any trigger foods, such as coffee, chocolate, tomatoes, and fatty or spicy foods.
- Eat smaller meals and their evening meal 3–4 h before going to bed, if possible.
- Stop smoking, if appropriate.
- Reduce alcohol consumption.
- Sleep with the head of the bed raised (e.g. by placing wood or bricks under the bedhead to raise it by 10–20 cm, if practical).
- Assess for stress and anxiety, which may worsen symptoms, and encourage relaxation strategies, if needed.

Obesity

If the patient is overweight, weight reduction should be advised (see Chapter 12: Prevention of Heart Disease: Weight management). There is some evidence that weight loss reduces symptoms of heartburn.

Food and drink

Small meals, eaten frequently, are better than large meals, as reducing the amount of food in the stomach reduces gastric distension, which helps to prevent reflux. Gastric emptying is slowed when there is a large volume of food in the stomach; this can also aggravate symptoms. High-fat meals delay gastric emptying. The evening meal is best taken several hours before going to bed to allow time for stomach emptying.

Alcohol, caffeine and chocolate have a direct effect as they make the lower oesophageal sphincter less competent by reducing its pressure and therefore contribute to symptoms.

Posture

Bending, stooping and even slumping in an armchair can provoke symptoms and should therefore be avoided when possible. It is better to squat rather than bend down. Since the symptoms are often worse when the patient lies down, there is evidence that raising the head of the bed can reduce both acid clearance and the number of reflux episodes. Using extra pillows is not as effective as raising the head of the bed (e.g. with bricks under the bed). The reason for this is that using extra pillows raises only the upper part of the body, with bending at the waist, which can result in increased pressure on the stomach contents.

Clothing

Tight, constricting clothing, especially waistbands and belts, can be an aggravating factor and should be avoided.

Smoking

Nicotine relaxes the lower oesophageal sphincter. The pharmacist is in a good position to offer advice about how to stop smoking, offering a smoking cessation product where appropriate (see Chapter 12: Prevention of Heart Disease). The knowledge that the discomfort of heartburn will be reduced can be a motivating factor in giving up smoking.

HEARTBURN IN PRACTICE

Patient perspectives

> *I have been having trouble with heartburn. In fact, it is one of the reasons I wanted to lose weight. I used to get it every once in a while, but then it started to get more frequent. It used to be only during the night, but then it started happening in the middle of the day. I get a burning feeling in my chest and acid coming up into my throat, leaving a horrible taste in the back of my throat. Because I started getting it during the day, I had to start carrying antacid tablets around all the time. I have not been to a doctor. I found that getting my weight down to a certain level (out of the overweight range) and doing more walking got rid of my heartburn. It seems it does not take much extra weight before it starts again. Exercise certainly helps.*

Case 1

Mrs Amy Beston is a woman aged about 50 years who wants some advice about a stomach problem. You find out that sometimes she gets a burning sensation just above the breastbone and feels the burning in her throat, often with a bitter taste, as if some food has been brought back up. The discomfort is worse when in bed at night and when bending over while gardening or reaching into low cupboards. She has been having the problem for 1 or 2 weeks and has not yet tried to treat it. Mrs Beston is not taking any medicines from the doctor. To your experienced eye, this lady is at least 7–8 kg overweight. You ask Mrs Beston if the symptoms are worse at any particular time, and she says they are worst shortly after going to bed at night.

The pharmacist's view

This woman has many of the classic symptoms of heartburn, such as pain in the retrosternal region and reflux. The problem is worse at night after going to bed, which is common in heartburn. Mrs Beston has been experiencing the symptoms for about 2 weeks and is not taking any medicines from the doctor.

It would be reasonable to advise the use of an alginate/antacid product about 1 h after meals, and before going to bed, or a PPI. Practical advice could include the tactful suggestion that Mrs Beston's symptoms would be improved if she lost weight (see Chapter 12: Prevention of Heart Disease: Weight management). Starting a conversation about weight loss is a sensitive topic and a possible opening might be 'In some people heartburn may be related to weight – are you OK about discussing your weight?' If your pharmacy provides a weight management service, you could ask if Mrs Beston is interested in participating in that service. Alternatively, advice on healthy eating and contact with a local weight management group could be given. Mrs Beston could also try cutting down on tea, coffee and alcohol consumption, and if she smokes, then she could try to stop it. This is a long list of potential lifestyle changes. You can explain the contributory factors and negotiate with her as to which one she will begin with. Success is more likely if changes are introduced one at a time.

Women going through menopause are more prone to heartburn, and weight gain at the time of menopause will exacerbate the problem.

The doctor's view

The advice given by the pharmacist is sensible. Acid reflux is the most likely explanation. It is not clear from the presentation whether Mrs Beston was seeking medication or simply asking for an opinion about the cause of her symptoms, or both. It is always helpful to explore a patient's expectations in order to produce an effective outcome to a consultation. In this instance, the interchange between the pharmacist and Mrs Beston is complex as a large amount of information needs to be given, both explaining the cause of the symptoms (providing an understandable description of oesophagus, stomach, acid reflux and oesophagitis) and advising about treatment and lifestyle. It is often sensible to offer a follow-up discussion to check on progress and reinforce advice. If Mrs Beston's heartburn was not improving, it would provide an opportunity to recommend referral to her GP surgery.

The doctor's next step would be very much dependent on this information. If a clear story of heartburn caused by acid reflux were obtained, then reinforcement of the pharmacist's advice concerning posture, weight, diet, smoking and alcohol consumption would be appropriate. If medication was requested, antacids or alginates could be tried. If the symptoms were severe, an H_2 antagonist or PPI would be treatment options. In case of persistent symptoms or diagnostic uncertainty, referral for endoscopy would be necessary. *Helicobacter pylori* eradication is not thought to play a role in the management of heartburn.

Case 2

You have been asked to recommend a 'strong' mixture for heartburn for Jamal Isreb, a local man in his late 50s who works in a nearby warehouse. He tells you that he has been getting terrible heartburn for which his doctor prescribed some mixture about 1 week ago. You remember dispensing a prescription for a liquid alginate preparation. The bottle is now empty, and the problem is no better. When asked if he can point to where the pain is, Mr Isreb gestures across his chest and clenches his fist when describing the pain, which he says feels heavy. You ask whether the pain ever moves, and he tells you that sometimes it goes to his neck and jaw. Mr Isreb is a smoker and is not taking any other medicines. When asked if the pain worsens on bending or lying down, he says it does not; however, he tells you that he usually gets the pain when he is at work, especially on busy days.

The pharmacist's view

This man should see his doctor immediately. The symptoms he has described are not those that would be typical of heartburn. In addition, he has been taking an alginate preparation, which has been ineffective. Mr Isreb's symptoms give cause for concern; the heartburn is associated with effort at work, and its location and radiation suggest a more serious cause, possibly cardiac.

The doctor's view

Mr Isreb's story is suggestive of angina. He should be advised to discuss his problem with his doctor (or the out-of-hours service) immediately. The doctor would require more details about the pain, such as duration and whether or not the pain can come on without any exertion. The doctor would want to know if the symptoms have been getting worse over the last week (as suggested by his excessive antacid use) as this indicates ‘unstable angina’. If the symptoms have been getting progressively worse over the previous week or if periods of pain were frequent, prolonged and unrelieved by rest, it would be usual to arrange immediate hospital admission as the picture sounds like unstable angina or acute coronary syndrome.

Cases of suspected cardiac chest pain or angina are investigated urgently at a hospital (some hospitals run a same-day chest pain clinic). Fuller assessment would usually include an examination, electrocardiogram, urine analysis and blood test followed by ‘treadmill’ testing (i.e. exercise electrocardiogram) and coronary angiography. The latter allows visualisation of the blood vessels supplying the heart muscle and assessment of whether surgery or stenting would be advisable. If coronary artery disease is confirmed, this would lead to medication, e.g. *aspirin* or *clopidogrel*, *glyceryl trinitrate* (*GTN*) and possibly a beta blocker, or a rate-limiting calcium channel blocker being prescribed. As this is ‘secondary prevention’, for established disease, a statin (usually *atorvastatin* 80 mg daily) is also indicated. Mr Isreb would be strongly advised to stop smoking and cessation advice provided, possibly with a referral to the stop smoking clinic.

INDIGESTION

Indigestion (dyspepsia) is upper abdominal discomfort or pain that patients may describe as a burning sensation, heaviness or an ache. Often related to eating, it may be accompanied by symptoms such as nausea, fullness in the upper abdomen or belching. It is commonly presented in community pharmacies and is often self-diagnosed by patients, who may use the term indigestion to include anything from pain in the chest and upper abdomen to lower abdominal symptoms. Many patients use the terms indigestion and heartburn interchangeably and there may be an overlap in symptoms. You must establish whether such a self-diagnosis is correct and exclude the possibility of serious disease.

What you need to know

Symptoms
Age
    Adult or child
Duration of symptoms
Previous history

Details of pain
- Where is the pain?
- What is its nature?
- Is it associated with food?
- Is the pain constant or spasmodic?
- Are there any aggravating or relieving factors?
- Does the pain move to anywhere else?

Associated symptoms
- Loss of appetite
- Weight loss
- Nausea/vomiting
- Alteration in bowel habit

Diet
Any recent change of diet?
Alcohol consumption
Smoking habit
Medication
Medicines already tried
Other medicines being taken

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Symptoms

The symptoms of typical indigestion include poorly localised upper abdominal (the area between the umbilicus and the ribcage) discomfort that may be a burning, heaviness or ache, which may be brought on by particular foods, excess food, alcohol consumption or medication (e.g. NSAIDs or *aspirin*).

Age

Indigestion is rare in children. Abdominal pain is a common symptom in children and is often associated with an infection. OTC treatment is not appropriate for abdominal pain of unknown cause in children, and referral to the GP surgery would be advisable.

Be cautious when dealing with first-time indigestion in older people and refer them to the GP for a diagnosis; NICE recommend an age threshold of 55 years.

Box 3.1 Alarm symptoms ('red flags') and indigestion: reasons for referral

There is usually no need for medical advice for indigestion as it is often mild and infrequent. Pharmacists can usually help with advice on lifestyle and treatment.

Refer to the GP if there is recurring indigestion and any of the following applies:

- 55 years of age or over
- Unexplained weight loss (without meaning to)
- Difficulty in swallowing (dysphagia)
- Persistent or recurrent nausea or vomiting
- Iron deficiency anaemia (however, this diagnosis will require a blood test)
- Patient concerned by a lump or mass in the stomach
- Blood in vomit or stool (which may be black and tarry – called melaena)
- Persistent abdominal pain, particularly if severe or unrelated to meals
- No response PPIs

These symptoms may be a sign of a more serious underlying health problem, such as a stomach ulcer or stomach cancer.

Source: Adapted from NHS Health A–Z – Indigestion: See also NICE Cancer Referral Guidelines – NG12.

All patients, of any age, with alarm symptoms ('red flags') should be referred (Box 3.1). This concern is based on the risk of gastric cancer, which, while rare in young patients, is more likely to occur in those aged 55 years and over. Careful history taking is therefore of paramount importance here.

Duration/previous history

A person with indigestion that is persistent or recurrent should be referred to the GP surgery, after considering the information gained from questioning. Any patient with a previous history of the symptom that has not responded to treatment or that has got worse should be referred.

Details of pain/associated symptoms

If the pharmacist can obtain a good description of the pain, then the decision whether to advise treatment or referral is much easier. A few medical conditions that may present as indigestion but require referral are described below.

Ulcer

Ulcers may occur in the stomach (gastric ulcer) or in the first part of the small intestine leading from the stomach (duodenal ulcer). Duodenal ulcers are more common and have different symptoms from gastric ulcers. They are much rarer than they used to be, possibly because of reduced prevalence of *Helicobacter pylori*, which is the main cause.

In the past, it was said that the diagnoses could be made clinically based on symptoms and examination; this differentiation is now viewed as less clear-cut (possibly related to the reduced prevalence and to the widespread use of PPIs). Typically, the pain of a duodenal ulcer is localised to the upper abdomen, slightly to the right of the midline. Patients can point to the site of pain with a single finger. The pain is gnawing in nature and is most likely to occur when the stomach is empty, especially at night. It is relieved by food (although it may be aggravated by fatty foods) and antacids. The pain of a gastric ulcer is in the same area, but less well localised. It is often aggravated by food and may be associated with nausea and vomiting. Appetite is usually reduced, and the symptoms of gastric ulcer are persistent and severe. On examination, there is tenderness in the upper abdomen. Both types of ulcers are associated with *Helicobacter pylori* infection and may be exacerbated or precipitated by smoking and NSAIDs. Gastric ulcer is worrying because of the associated risk of cancer.

Gallstones

Single or multiple stones can form in the gall bladder, which is situated beneath the liver. The gall bladder stores bile. It periodically contracts to squirt bile through a narrow tube (called the bile duct) into the duodenum to aid the digestion of food, especially fat. Stones can become temporarily stuck in the opening to the bile duct as the gall bladder contracts. This causes severe episodic pain (i.e. biliary colic) in the upper abdomen below the right rib margin. Biliary colic may be precipitated by a fatty meal. Because the secretion of bile is impaired, the gall bladder can become distended and persistently painful, and is prone to infection (cholecystitis). Sometimes, this type of pain can be confused with that of a duodenal ulcer.

Heartburn (gastro-oesophageal)

Many patients use the terms heartburn and indigestion interchangeably, and sometimes the two conditions cannot be differentiated. Heartburn is a pain arising in the upper abdomen passing upwards behind the breastbone (retrosternal) towards the throat. It is often precipitated by a large meal or on bending and lying down. Heartburn can often be treated by the pharmacist, but sometimes requires referral (see the previous section in this chapter).

Irritable bowel syndrome

Irritable bowel syndrome (IBS) is a common, non-serious, but troublesome, condition in which symptoms are thought to be caused by bowel spasm (see also the separate section on IBS later in this chapter). The cause is unknown, but it is commonly associated with anxiety and stress. There is usually an alteration in bowel habit, sometimes with alternating constipation and diarrhoea. Pain is usually present and a common feature is that this is often relieved by defaecation. It is usually in the lower abdominal (below the umbilicus) area, but it may sometimes be in the upper abdominal area and therefore confused with indigestion. People with recurrent indigestion for which no cause can be found may have a form of IBS, and there can be a distinct overlap with lower abdominal symptoms. Any persistent alteration in normal bowel habit is an indication for referral.

Atypical angina

Angina is usually experienced as a tight, painful constricting band across the middle of the chest, sometimes with radiation to the neck and/or arms. Atypical angina pain may be felt in the lower chest or upper abdomen. It is likely to be precipitated by exercise or exertion. If this occurs or is suspected, urgent referral is necessary.

More serious disorders

Persisting upper abdominal pain, especially when associated with anorexia and unexplained weight loss, may herald an underlying cancer of the stomach or pancreas. Sometimes, ulcers start bleeding, which may present with blood in the vomit (haematemesis) or in the stool (melaena). In case of melaena, the stool becomes tarry and black; see alarm symptoms ('red flags') (Box 3.1). Urgent referral is necessary.

Diet

Fatty foods or excessive consumption can cause indigestion and aggravate ulcers and may precipitate biliary colic if there is gall bladder abnormality. Alcohol consumption, particularly in large amounts, can cause indigestion symptoms.

Smoking habit

Smoking predisposes to, and may cause, indigestion and ulcers. Ulcers heal more slowly and relapse more often during treatment in smokers. The pharmacist is in a good position to offer advice on smoking cessation, perhaps with a recommendation to use nicotine replacement therapy.

Medication

Medicines already tried

Anyone who has tried one or more appropriate treatments without improvement or whose initial improvement in symptoms is not maintained should see the doctor.

Other medicines being taken

Gastrointestinal (GI) side effects can be caused by many drugs, so it is important to ascertain any medication that the patient is taking.

NSAIDs and *aspirin* have been implicated in the causation of ulcers and bleeding ulcers, and there are differences in toxicity related to increased doses and the nature of individual drugs. They inhibit prostaglandin synthesis in the gut lining, reducing the production of alkaline mucus that protects against stomach acid and thereby increasing the risk of ulceration in the stomach and duodenum. These drugs commonly cause indigestion. The antiplatelet drug *clopidogrel* also increases risk of GI bleeding. Elderly patients are particularly prone to such problems. Severe or prolonged indigestion in any patient taking an NSAID, *clopidogrel* or *aspirin* is an indication for referral.

Standard practice is now to co-prescribe a PPI with an NSAID as 'gastroprotection' in people over 65 years or with other risk factors (the PPI prevents acid from damaging the gastroduodenal lining). Particular care is needed in older people, for whom referral is always advisable if NSAID-associated indigestion is suspected.

Upper GI bleeding results in around 70,000 hospital admissions per year in the United Kingdom (UK) and is associated with about 7000 deaths. Many of these admissions and deaths are caused by the use of NSAIDs, *clopidogrel* and *aspirin* in older people. Newer antiplatelet drugs, such as *prasugrel* and *ticagrelor*, are also associated with GI bleeding and death, as are *warfarin* and the newer oral anticoagulants (*dabigatran*, *rivaroxaban*, *apixaban* and *edoxaban*).

OTC medicines also require consideration: *aspirin*, *ibuprofen* and *iron* are among those that may produce symptoms of indigestion. Some drugs may interact with antacids (see 'Interactions with antacids' below).

When to refer (see also Box 3.1)

Age over 55 years, if symptoms develop for the first time.

Associated with prescription of an NSAID, *clopidogrel* or *aspirin*.

Symptoms are persistent (longer than 5 days) or recurrent.

Pain is severe.

Blood in vomit or stool.

Pain gets worse on effort.
Persistent nausea or vomiting.
Treatment has failed.
Adverse drug reaction is suspected.
Associated unexplained weight loss.
Children.

Treatment timescale

If symptoms have not improved within 5 days, the patient should see the doctor.

MANAGEMENT

After excluding serious disease, treatment of dyspepsia with antacids may be recommended and is likely to be effective. GPs in England are advised to avoid prescribing antacid products for indigestion as patients are encouraged to 'self-care' with OTC products. PPIs are available OTC, specifically for heartburn and reflux symptoms (see the previous section on Heartburn), but not for 'indigestion';. The preparation should be selected on the basis of the individual patient's symptoms. Smoking and consumption of alcohol and fatty meals can all aggravate symptoms, so the pharmacist can advise appropriately.

Antacids

In general, liquids are more effective antacids than solids; they are easier to take, work more quickly and have a greater neutralising capacity. The liquid allows a large surface area to be in contact with the gastric contents. Some patients find tablets more convenient, and these should be well chewed before swallowing. It might be appropriate for the patient to have both; the liquid could be taken before and after working hours, while the tablets could be taken during the day for convenience. Antacids are best taken about 1 h after a meal because the rate of gastric emptying has then slowed and the antacid will therefore remain in the stomach for longer. If taken at this time, antacids may act for up to 3 h compared with only 30 min to 1 h if taken before meals. Repeated doses may be needed for full effect.

Sodium bicarbonate

Sodium bicarbonate is water soluble, acts quickly, is an effective neutraliser of acid and has a short duration of action. It should not be used alone for the relief of indigestion; it is present as an ingredient in many indigestion remedies where it gives a fast-acting effect in combination with longer-acting agents. It should be avoided in patients in whom sodium intake should be restricted (e.g. in patients with congestive heart failure). Also avoid in patients who are taking *lithium* as it increases excretion of *lithium*, leading to reduced plasma levels. The contents of OTC products should therefore be carefully scrutinised. The relative sodium contents of different antacids can be found in the *British National Formulary* (*BNF*). Long-term use of *sodium bicarbonate* may lead to systemic alkalosis and renal damage. However, in short-term use, mixed with other ingredients, it can be useful. Its use is more appropriate in acute rather than chronic dyspepsia.

Aluminium and magnesium salts (e.g. aluminium hydroxide and magnesium trisilicate)

Aluminium-based antacids are effective, but they tend to cause constipation. Their use is best avoided in anyone who is constipated and in elderly patients who have a tendency to constipation. Magnesium salts are more potent acid neutralisers than aluminium salts. They tend to cause osmotic diarrhoea as a result of the formation of insoluble magnesium salts and are useful in patients who are constipated or prone to constipation. Combination products containing aluminium and magnesium salts may cause less bowel disturbance.

Calcium carbonate

Calcium carbonate is commonly included in OTC formulations. It acts quickly, has a prolonged action and is a potent neutraliser of acid. *Calcium carbonate* can cause acid rebound and, if taken over long periods at high doses, hypercalcaemia and so should not be recommended for long-term use. If *calcium carbonate* and *sodium bicarbonate* are taken in large quantities with a high intake of milk, they can result in the milk-alkali syndrome. This involves hypercalcaemia, metabolic alkalosis and renal insufficiency; its symptoms are nausea, vomiting, anorexia, headache and mental confusion.

Simeticone

Simeticone (activated *dimeticone)* is sometimes added to antacid formulations for its defoaming properties. Theoretically, it reduces surface tension and allows easier elimination of 'trapped' gas from the gut by facilitating passage of flatus or eructation (belching). Evidence of benefit is uncertain.

Interactions with antacids

The BNF advises that antacids should preferably not be taken at the same time as other drugs since they may impair absorption and may also damage enteric tablet coatings designed to prevent breakdown in the stomach. As a consequence, release of the drug may be unpredictable; in addition, adverse effects may occur if the drug is released earlier than intended in the stomach. Taking the doses of antacids and other drugs at least 1 h apart should minimise interactions.

Antacids may reduce the absorption of some antibiotics, antifungals and antivirals (*tetracyclines*, *azithromycin*, *itraconazole*, *ketoconazole*, *ciprofloxacin*, *norfloxacin*, *rifampicin* and *atazanavir*). Absorption of phenothiazines, *gabapentin* and *phenytoin* may also be reduced (see the BNF for a full current list).

Sodium bicarbonate may increase the excretion of *lithium* and lower the plasma level. A reduction in lithium's therapeutic effect may occur so *sodium bicarbonate* is best avoided.

The changes in pH that occur after antacid administration can result in a decrease in iron absorption if iron is taken at the same time. The effect is caused by the formation of insoluble iron salts due to the changed pH. Taking iron and antacids at different times should prevent this problem (see the BNF for a detailed listing of interactions with antacids).

INDIGESTION IN PRACTICE

Case 1

Mrs Johnson, a woman in her 70s, complains of indigestion and an upset stomach. On questioning, you find out she has had the problem for a few days; the pain is epigastric and does not seem to be related to food. She has been feeling slightly nauseated. You ask about her diet; she has not changed her diet recently and has not been overdoing it. She tells you that she is taking four lots of tablets, namely for her heart, her waterworks and some new ones for her bad hip (*naproxen* 250 mg two twice daily). She has been taking them after meals, as advised, and has not tried any medicines yet to treat her symptoms. Before the *naproxen*, she was taking *paracetamol* for the pain. She normally uses *paracetamol* as a general painkiller at home; she tells you that she cannot take *aspirin* because it upsets her stomach.

The pharmacist's view

It sounds as though this woman is suffering from GI symptoms as a result of her NSAID. Such effects are more common in elderly patients and are potentially more serious in older people. She has been taking the medicine after food, which should have minimised any GI effects, and the best course of action would be to advise her to stop the *naproxen* and to refer her back to the doctor. It would be worth asking Mrs Johnson about the dose and frequency with which she took the *paracetamol* to see whether she took enough for it to be effective.

The doctor's view

Referral back to her doctor is the correct course of action. Almost certainly her symptoms have been caused by the *naproxen*. Any older person prescribed an NSAID should also be co-prescribed a PPI, and this has not happened here for some reason. Another important consideration given her 'heart problems' is the cardiovascular risk from taking NSAIDs, although this is relatively low with *naproxen* compared with some others.

She should be advised to stop the *naproxen*. A blood test for *Helicobacter pylori* may be helpful, and while awaiting the results, she could be started on a PPI. If the *Helicobacter pylori* test came back positive, she may also benefit from *Helicobacter pylori* eradication therapy.

Control of her primary symptom (hip pain) will then be a problem. Ideally, NSAIDs should be avoided. It may be possible to change the *paracetamol* to a compound preparation containing *paracetamol* and *codeine* or *paracetamol* and *dihydrocodeine*. If this is not enough, the *naproxen* could be reintroduced cautiously, initially at a lower dose, while taking a PPI, if her indigestion symptoms have settled after a few weeks. Gradually increasing exercise can also help and physiotherapy may be considered. Failure to control hip pain due to osteoarthritis may require referral to an orthopaedic surgeon to consider a hip replacement.

Case 2

A man in his early 50s comes in to ask your advice about his stomach trouble. He tells you that he has been having the problem for a couple of months, but it seems to have got worse. The pain is in his stomach, quite high up; he had similar pain a few months ago, but it got better and has now come back again. The pain seems to get better after a meal; sometimes, it wakes him during the night.

He has been taking *Rennies* to treat his symptoms; they seemed to do the trick but do not seem to be working now, even though he takes a lot of them. He is not taking any other medicines.

The pharmacist's view

This patient has a history of epigastric pain, which earlier settled and but has now returned. At one stage, his symptoms responded to an antacid, but they no longer do so, despite his increasing the dose. This long history, the worsening symptoms and the failure of antacid medication warrant referral to the doctor.

The doctor's view

It would be sensible to recommend referral to his doctor as the information obtained so far does not permit diagnosis. It is possible that he has a peptic ulcer in his stomach or duodenum, acid reflux or even stomach cancer, but further information is required. An appropriate examination and investigation will be necessary.

The doctor would need to listen carefully, first by asking open questions and then by asking more direct, closed questions to find out more information; for example, how does the pain affect him? What is the nature of the pain (burning, sharp, dull, tight or constricting)? Does it radiate (i.e. to the back or chest, down arms or up to the neck/mouth)? Are there any associated symptoms (nausea, difficulty in swallowing, loss of appetite, weight loss or shortness of breath)? Are there any other problems (constipation or flatulence)? What are the aggravating/relieving factors? How is his general health? What is his diet like? How are things going for him generally (personally/professionally)? Does he smoke? How much alcohol does he drink? What does he think might be wrong with him? What are his expectations for treatment/management?

The doctor is likely to test for *Helicobacter pylori* and to arrange endoscopy. Ideally, the doctor will not prescribe a PPI or H_2 antagonist (and advise not to take these OTC) if the endoscopy can be arranged swiftly, as use of these drugs can make diagnosis problematic. However, if the patient's symptoms are severe, these treatments may have to be used.

NAUSEA AND VOMITING

Nausea and vomiting are symptoms that have many possible causes. There is no effective OTC treatment once vomiting is established. For this reason, this section will deal briefly with some of the causes of these symptoms and the next section will continue with consideration of the prevention of motion sickness, where the pharmacist can recommend effective treatments.

What you need to know

- Age
  - Infant, child, adult or elderly
  - Pregnancy
  - Duration
- Associated symptoms
  - Has vomiting started?
  - Abdominal pain
  - Diarrhoea
  - Constipation
  - Fever
  - Alcohol intake
- Medication
  - Prescribed
  - OTC
- Previous history
- Dizziness/vertigo

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

The very young and the elderly are most at risk of dehydration as a result of vomiting. The pharmacist must distinguish, by questioning, between vomiting (the forced expulsion of gastric contents through the mouth) and regurgitation (where food is effortlessly brought up from the throat and stomach).

Vomiting of milk in infants less than 1 year old may be due to infection or feeding problems or, rarely, an obstruction, such as pyloric stenosis. In pyloric stenosis, there is thickening of the muscular wall around the outlet of the stomach, which causes a blockage. It typically occurs, for unknown reasons, in the first few weeks of life in a firstborn male. In some babies, early exposure to oral erythromycin has been implicated as a risk factor. The vomiting is frequently projectile in that the vomit is forcibly expelled a considerable distance. The condition can be cured by an operation under general anaesthetic lasting about half an hour, called a pyloromyotomy.

In most babies, reflux or regurgitation of milk is nothing to worry about as long as they are healthy and gaining weight as expected; it is sometimes known as posseting. In a small number of babies, it can become a problem and cause distress and affect growth. Children who are suspected of not thriving or where the symptoms seem extreme should be referred to the doctor or health visitor.

When regurgitation occurs in adults, it is associated with oesophageal disease with difficulty in swallowing and requires referral (see Heartburn: Symptoms: Difficulty in swallowing, discussed earlier in this chapter). Nausea is associated with vomiting but rarely with regurgitation, and this can be employed as a distinguishing feature during questioning.

Pregnancy

Nausea and vomiting are very common in pregnancy, usually beginning after the first missed period and occurring early in the morning. Pregnancy should be considered as a possible cause of nausea and vomiting in any woman of childbearing age who presents at the pharmacy complaining of nausea and vomiting. Nausea and vomiting are more common in the first pregnancy than in subsequent ones (for more details, see Chapter 6: Women's Health: Common symptoms in pregnancy).

Duration

Generally, adults should be referred to the GP surgery if vomiting has been present for longer than 2 days. Irrespective of the duration, children under the age of 2 years with vomiting should be referred because of the risks from dehydration. Anyone presenting with chronic vomiting should be referred to the doctor since such symptoms may indicate the presence of a serious problem, such as gastric or duodenal ulcer or upper GI cancer.

Associated symptoms

An acute infection (gastroenteritis) is often responsible for vomiting, and, in these cases, diarrhoea (see section on Diarrhoea, later in this chapter) may also be present. Careful questioning about food intake during the previous 2 days may give a clue as to the cause. In young children, rotavirus is the most common cause of gastroenteritis; this is highly infectious and so it is not unusual for more than one child in the family to be affected. In the very young, vomiting without other symptoms can be caused by a serious infection, such as meningitis, and is an indication for immediate referral.

Vomiting blood may indicate serious disease and is an indication for urgent referral since it may be caused by haemorrhage from a peptic ulcer or gastric cancer. Sometimes, the trauma of vomiting can cause a small bleed, or blood streaking of vomit, due to tearing of the gut lining (sometimes described medically as

Mallory-Weiss syndrome). Vomit with a faecal smell means that the GI tract may be obstructed and such a case requires urgent referral.

Nausea and vomiting may be associated with a migraine. Any history of dizziness or vertigo should be noted as it may point to inner ear disease, e.g. labyrinthitis or Meniere's disease as a cause of the nausea.

Alcohol intake

People who drink large quantities of alcohol may vomit, often in the morning. This may be due to occasional binge drinking or chronic ingestion of alcohol. People with problem drinking and alcohol dependence often feel nauseous and retch in the morning. The questioning of patients about their intake of alcohol is a sensitive area and should be approached with tact. Asking about smoking habits might be a good way of introducing other social habits.

Medication

Prescribed and OTC medicines may make patients feel sick. *Aspirin* and NSAIDs are common causes. Some antibiotics may cause nausea and vomiting, e.g. *erythromycin* (which stimulates stomach contraction). Oestrogens, corticosteroids and opioid analgesics may also produce these symptoms. Symptoms can sometimes be improved by taking the medication with food, but if they continue, the patient should see the doctor. Opioid-induced nausea and vomiting is very common, and some people are particularly susceptible to this; when initiating strong opioids, such as *morphine*, an antiemetic should always be co-prescribed. *Digoxin* toxicity may show itself by producing nausea and vomiting, and this should prompt immediate referral where questioning has not produced an apparent alternative cause. Vomiting, with loss of fluids and possible electrolyte imbalances, may cause problems in older people taking *digoxin* and diuretics.

Previous history

Any history that suggests chronic nausea and vomiting would indicate referral.

MANAGEMENT

Patients who are vomiting should be referred to the doctor who will be able to investigate and prescribe an antiemetic, if needed. The pharmacist can initiate rehydration therapy in the meantime.

MOTION SICKNESS AND ITS PREVENTION

Motion (travel) sickness is thought to be caused by a conflict of messages to the brain, where the vomiting centre receives information from the eyes, the GI tract and the vestibular system in the ear. Symptoms of motion sickness include nausea and sometimes vomiting, pallor and cold sweats. Parents commonly seek advice about how to prevent motion sickness in children, in whom the problem is most common. Any form of travel, i.e. by air, sea or road, can produce symptoms. Effective prophylactic treatments are available OTC and can be selected to match the patient's needs.

What you need to know

Age
    Infant, child or adult
Previous history
Mode of travel: by car, bus, air, ferry, etc.
Length of journey
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Motion sickness is common in young children. Babies and very young children up to the age of 2 years seem to only rarely suffer from the problem and therefore they do not usually require treatment. The incidence of motion sickness seems to greatly reduce with age, although some adults still experience symptoms, and seasickness remains a problem for many. The minimum age at which products designed to prevent motion sickness can be given varies, so for a family with several children careful product selection may be required to provide one medicine to treat all cases.

Previous history

The pharmacist should ascertain which members of the family have previously experienced motion sickness and for whom treatment will be needed.

Mode of travel/length of journey

Details of the journey to be undertaken are useful. The estimated length of time to be spent travelling will help treatment selection, since the length of action of available drugs varies.

Once vomiting starts, there is little that can be done; therefore, any medicine recommended by the pharmacist must be taken in good time before the journey if it is to be effective. The importance of preventing symptoms before they can gain a hold should be emphasised to the parents. Long journeys may require repeat dosing while travelling, and hence the recommended dosage interval should be stressed.

General advice can be offered, as well as specific advice according to the mode of transport, such as:

- Keeping still, if possible by choosing a cabin or seat in the middle of a boat or plane.
- Using a pillow or headrest to help keep the head as still as possible.
- Children are less likely to feel or be sick if they can see out of the car, so appropriate seats can be used to elevate the seating position of small children. This technique seems to work and is thought to be because it allows the child to see relatively still objects outside the car. This ability to focus on such objects may help to settle the brain’s receipt of conflicting messages.
- Try to keep children as calm and relaxed as possible by encouraging them to listen to music, or play games, as this helps them concentrate on something else. However, again, it seems that looking outside at still objects remains useful and that a simple game, e.g. ‘I spy’, is better than reading in this respect.
- For many travel sickness sufferers, reading or watching a movie (such as on smartphones or tablet devices) exacerbates the feeling of nausea.

Medication

In addition to checking any prescription or OTC medicines currently being taken, the pharmacist should also enquire about any treatments used in the past for motion sickness and their level of success or failure.

MANAGEMENT

Prophylactic treatments for motion sickness, which can be bought OTC, are effective, and there is usually no need to refer patients to the doctor.

Antimuscarinic (anticholinergic) activity is thought to prevent motion sickness and forms the basis for treatment with antimuscarinic agents (e.g. *hyoscine*) and antihistamines, which have antimuscarinic actions (e.g. *cinnarizine* and *promethazine*).

Antihistamines

Antihistamines include *cinnarizine* and *promethazine teoclate*. Antimuscarinic effects are thought to be responsible for the effectiveness of antihistamines in the prophylaxis of motion sickness. They have the potential to cause drowsiness, and *promethazine teoclate* appears to be the most sedative. *Promethazine teoclate* has a long duration of action and is useful for long journeys since it is taken only once daily. *Cinnarizine* and *promethazine teoclate* tablets are not recommended for children younger than 5 years.

Antihistamines should not be taken for motion sickness during pregnancy and are best avoided if breastfeeding.

Antimuscarinic (anticholinergic) agents

The only antimuscarinic (anticholinergic) used widely for the prevention of motion sickness is *hyoscine hydrobromide*, which can be given to children aged 3 or 4 years and over (the age limitation depends on the product). This can cause drowsiness, blurred vision, dry mouth, constipation and urinary retention side effects, although it is probably unlikely to do so at the doses used in OTC formulations for motion sickness. Children could be given sweets to suck to counteract any drying of the mouth.

Hyoscine has a short duration of action (from 1 to 3 h). It is therefore suitable for shorter journeys and should be given 20 min before the start of the journey. *Hyoscine* patches last much longer (up to 3 days) and may be useful for long journeys; they need to be applied 5–6 h before travelling for the best effect. The patches are not suitable for children under 10 years of age.

Antimuscarinic drugs and antihistamines with antimuscarinic effects are best avoided in men with lower urinary tract symptoms because of the possibility of urinary retention, as well as in people with glaucoma because the intraocular pressure might be increased.

Hyoscine should not be taken in pregnancy or when breastfeeding.

Pharmacists should remember that side effects from antimuscarinic agents are additive and may be increased in patients already taking drugs with antimuscarinic effects, such as *oxybutynin* and other drugs used for urinary symptoms, tricyclic antidepressants (e.g. *amitriptyline*), butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*). It is therefore important for the pharmacist to determine the identity of any medicines currently being taken by the patient.

Alternative approaches to motion sickness

Ginger

Ginger has been used for many years for travel sickness. Clinical trials have produced conflicting findings and the suggested mechanism of action is blockage of

5HT3 (serotonin) receptors in the GI tract. No official dosage level has been suggested, but several proprietary products containing ginger are available. Ginger can also be eaten in a biscuit, or taken as crystallised ginger or drunk as tea. Ginger may be worth trying for a driver who suffers from motion sickness since it does not cause drowsiness and might be worth considering for use in pregnant women or breastfeeding women for whom other antiemetics, such as antimuscarinics and antihistamines, are not recommended. Ginger has been shown to be effective in some small trials on nausea and vomiting associated with pregnancy; nibbling on food with ginger in it may be beneficial, but ginger supplements are not regulated so care may be required to ensure reputable supply (see Chapter 6: Women's Health: Common symptoms in pregnancy).

Acupressure wristbands

Elasticated wristbands that apply pressure to a defined point on the inside of the wrists are available. Evidence of effectiveness is equivocal, but it is unlikely they would cause harm. Such wristbands might be worth trying for drivers or pregnant women.

CONSTIPATION

Constipation is difficult to define and is often self-diagnosed by patients. Generally, it is characterised by the unsatisfactory passage of hard, dry stools less frequently than by the person's normal pattern; it may be uncomfortable, and there is a sense that passage of stools is incomplete. It is important for the pharmacist to find out what the patient means by constipation and to establish what (if any) change in bowel habit has occurred and over what period of time. Obviously, this is a sensitive issue that can cause embarrassment; consultations to establish concerns should take place in privacy.

What you need to know

Details of bowel habit
    Frequency and nature of bowel actions now
    When was the last bowel movement?
    What is the usual bowel habit?
    When did the problem start?

Is there a previous history?

Associated symptoms

- Abdominal pain/discomfort/bloating/distension
- Nausea and vomiting
- Blood in stool
- Any weight loss

Diet

- Any recent change in diet?
- Is the usual diet rich in fibre?

Medication

- Present medication
- Any recent change in medication
- Previous use of laxatives

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Details of bowel habit

Many people believe that a daily bowel movement is necessary for good health and laxatives are often taken and overused as a result. In fact, the normal range may vary from three movements in 1 day to three movements in 1 week. Therefore, an important health education role for the pharmacist may be to reassure patients that their frequency of bowel movement is normal. Patients who are constipated will usually complain of hard stools that are difficult to pass, and may cause discomfort while being passed, and their bowel movements are less frequent than usual.

Determining any change in bowel habit is essential, particularly any prolonged change. A change of ‘bowel habit’ (from a pattern of going to the toilet over months or years), which has lasted for 2 weeks or longer, would be an indication for referral.

Associated symptoms

Constipation is often associated with abdominal discomfort, bloating and nausea. In some cases, constipation can be so severe that it obstructs the bowel. This obstruction or blockage usually becomes evident by causing colicky abdominal pain, abdominal distension and vomiting. When symptoms suggestive of obstruction are present, urgent referral is necessary as hospital admission is the usual course of action. Other causes of obstruction, such as bowel tumours or twisted bowels (volvulus), require urgent surgical intervention.

Blood in the stool

The presence of blood in the stool can be associated with constipation and, although alarming, is not necessarily serious, but does require medical referral for diagnosis. In such situations, blood may arise from haemorrhoids (piles) or a small crack in the skin on the edge of the anus (anal fissure) – see the section on Haemorrhoids later in this chapter. Both these conditions can be caused by a diet low in fibre that tends to produce constipation. The bleeding from haemorrhoids is characteristically noted on toilet paper after defaecation. The bright red blood may be on the surface of the motion (not mixed in with the stool) and splashed around the toilet pan. Haemorrhoids may cause discomfort on defaecation and cause irritation or itchiness. The piles may drop down (prolapse) and protrude through the anus. A fissure tends to cause less bleeding, but it causes much more severe pain on defaecation. Medical referral is advisable as there are other more serious causes of bloody stools, especially where the blood is mixed in with the motion.

Bowel cancer

Large bowel, or colorectal, cancer may also present with a persisting change in bowel habit (see Table 3.2). It is common and around 42,000 people get diagnosed with this problem each year in the UK. This condition kills about 16,500 people each year. The incidence rises significantly with age, and it is uncommon in people under the age of 50 years (with less than 5% of cases). It is most often seen in older people; 44% of bowel cancer cases in the UK each year are diagnosed in people aged 75 and over, and the peak age for incidence is in people aged 85–89.

TABLE 3.2 Common symptoms of bowel cancer (adapted from NHS Health A–Z)

The symptoms of bowel cancer can be subtle and do not necessarily make people feel ill.

More than 90% of people with bowel cancer have one or more of the following three main symptoms:

- A persistent change in bowel habit – usually going more often, with looser stools and sometimes abdominal pain
- Blood in the stools without other symptoms of piles (haemorrhoids)
- Abdominal pain, discomfort or bloating brought on by eating – sometimes resulting in a reduction in the amount of food eaten and unintentional weight loss

Constipation is rarely caused by serious bowel conditions.

There is evidence of a significant reduction in mortality from screening as early diagnosis or removal of precancerous polyps can dramatically improve the prognosis. National screening uses the faecal immunochemical test kit, which detects the microscopic amounts of blood that leaks from tumours and polyps. This test is offered to those aged between 60 and 74 years, every two years in England, Wales and Northern Ireland (the screening starts at 50 years in Scotland), and detects around a quarter of cases. Only around 58% of the tests sent out are returned so there is an important role for all healthcare professionals in encouraging participation.

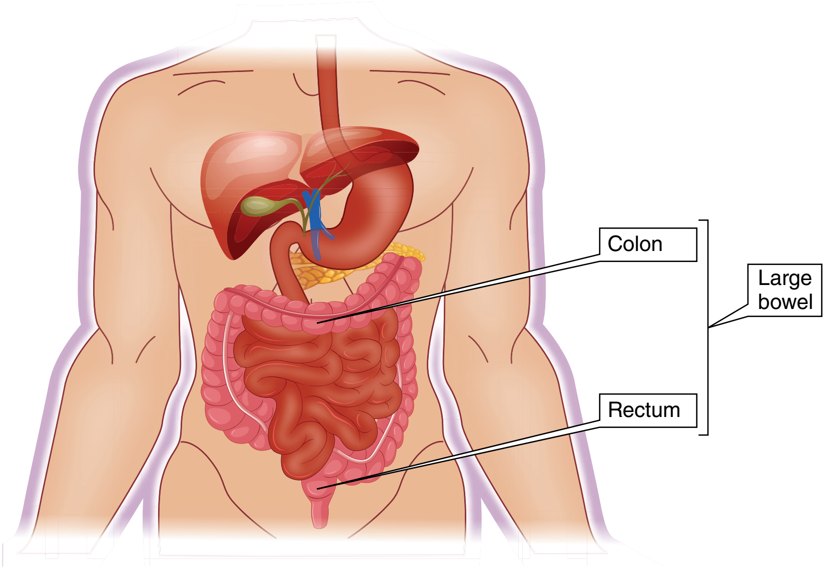


FIGURE 3.3 Diagram of the large bowel.

Diet

Insufficient dietary fibre is a common cause of constipation. An impression of the fibre content of the diet can be gained by asking what would normally be eaten during a day, looking particularly for the presence of wholemeal cereals, brown bread, fresh fruit and vegetables.

Changes in diet and lifestyle, e.g. following a job change, loss of work, retirement or travel, may result in constipation. Inadequate intake of food and fluids, e.g. in someone who has been ill, may also be responsible for constipation.

Lack of exercise or reduced mobility is also implicated, and regular exercise has an important role to play in managing constipation.

It is thought that an inadequate fluid intake is a common cause of constipation and advice about this is also important.

Medication

One or more laxatives may have already been taken in an attempt to treat the symptoms. Failure of such medication may indicate that referral to the GP surgery is the best option. Previous history of the use of laxatives is relevant. Continuous use, especially of stimulant laxatives, can result in a vicious circle where the contents of the gut are expelled, causing a subsequent cessation of bowel actions for 1 or 2 days. This then leads to the false conclusion that constipation has recurred and more laxatives are taken and so on.

Chronic overuse of stimulant laxatives can result in loss of muscular activity in the bowel wall (an atonic colon) and thus further constipation. Excessive doses may cause diarrhoea and can lead to hypokalaemia. Measures to support the safer use of OTC stimulant laxatives were introduced by the Medicines and Healthcare products Regulatory Agency (MHRA) in 2020, following a review of safety. This included restricting the number of tablets/doses that can be supplied OTC.

Many drugs can induce constipation; some examples are listed in Table 3.3(a). The details of prescribed and OTC medications being taken should be established.

TABLE 3.3(A) Drugs that may cause constipation

Drug group	Drug examples
Analgesics and opiates	*Dihydrocodeine* and *codeine*
Antacids	*Aluminium salts*
Antimuscarinics	*Hyoscine* and *oxybutynin*
Anticonvulsants	*Phenytoin*
Antidepressants	*Tricyclics* and *selective serotonin reuptake inhibitors (SSRIs)*
Antihistamines	*Chlorphenamine* and *promethazine*
Anti-Parkinson agents	*Levodopa*
Calcium channel blockers	*Verapamil*
Calcium supplements	
Diuretics	*Bendroflumethiazide*
Iron	
Laxative abuse	
Antipsychotics	*Chlorpromazine*

When to refer

Change in bowel habit of 2 weeks or longer
Presence of abdominal pain, vomiting and bloating
Weight loss
Blood in stools
Prescribed medication suspected of causing symptoms
Failure of OTC medication

Treatment timescale

If 1 week's use of treatment does not produce relief from symptoms, the patient should see the doctor. If the pharmacist feels that it is necessary to give only dietary advice, then it would be reasonable to leave it for about 2 weeks to see if the symptoms settle.

MANAGEMENT

Constipation that is not caused by serious pathology will usually respond to simple measures. Dietary and lifestyle advice is the mainstay of management and should be the chief intervention for managing constipation in most patients.

Dietary advice

The most important part of dietary guidance is to increase fibre intake. Fibre should come from a variety of sources, as eating too much of one type of food may not provide a healthy, balanced diet. Patient information leaflets can help with this guidance. Advice should include information on higher-fibre breakfast cereals, higher-fibre breads (which can include white bread) and wholewheat pasta, and brown rice should be suggested. Beans, lentils and plenty of fruit and vegetables should be advocated; see a list of fibre content in some foods in Table 3.3(b). Many people may not be keen on these changes, and hence careful assessment and tailored approaches may be required. A gradual change may be needed.

Alongside this, patients should be advised to drink plenty of fluids and reduce alcohol consumption.

TABLE 3.3(B) Fibre content in suggested foods

Food	Fibre per serving (g)
2 slices of wholemeal toast	6
Porridge	5
Baked potato with skin	5
Chick peas – 100 g	4.5
Peas – 100 g	4
Baked beans	3.5
Carrots – 100 g	2.5
Broccoli – 100 g	2.3
1 apple	2

Source: Based on the British Dietetic Association, `https://www.bda.uk.com/resource/fibre.html`

Exercise

Regular exercise is important. A recent systematic review showed benefit from exercise (particularly aerobic exercise), but study quality was not high. Simple advice is to get out for a walk on most days when this is possible. The NHS website has useful information on getting started with exercise, including for those limited by frailty, age and long-term conditions or disability.

Laxatives

In the short term, a laxative may be recommended to ease the immediate problem. First-line laxatives are bran and bulk-forming preparations. It is worth noting that primary care prescribers are advised by the NHS in England not to prescribe some OTC medicines, including laxatives for short-term use, and patients may be referred to their community pharmacy to purchase them. If you are satisfied the medicine is clinically suitable, then you can supply it.

Bulking agents – bran, ispaghula husk, methylcellulose and sterculia

Bulk-forming preparations are those that most closely copy the normal physiological mechanisms involved in bowel evacuation and are the laxatives of choice. They work by swelling in the gut and increasing faecal mass so that peristalsis is stimulated. The laxative effect can take several days to develop.

Unprocessed wheat bran, taken with food or fruit juice, is an effective bulk-forming preparation and can be helpful for many people. Oat bran can also be used. Bran should be introduced gradually to reduce symptoms of flatulence and bloating, and fluid intake should be increased. Continued long-term use should be regarded as a necessary change in lifestyle.

Ispaghula husk, *methylcellulose* and *sterculia* are especially useful where patients have difficulty in increasing their intake of dietary fibre using fruit, vegetables and bran. The sodium content of some of these bulk laxatives (such as *sodium bicarbonate*) should be considered in those requiring a restricted sodium intake. They may be better tolerated than bran.

When recommending the use of a bulk laxative, you should advise that an increase in fluid intake is also necessary. In the form of granules or powder, the preparation should be mixed with a full glass of liquid (e.g. fruit juice or water) before taking and ideally followed by a further glass of liquid. Fruit juice can mask the bland taste of the preparation. Intestinal obstruction may result from inadequate fluid intake in patients taking bulk laxatives, particularly in those whose gut is not functioning properly as a result of overuse of stimulant laxatives.

Bulk laxatives are usually considered unsuitable for opioid-induced constipation as the problem relates to decreased motility of the gut; bulk laxatives may cause discomfort by distension of the bowel, or obstruction.

Osmotic laxatives – lactulose, lactitol, macrogol, magnesium sulphate and glycerine

Macrogol and *lactulose* work by maintaining the volume of fluid in the bowel and may take 1–2 days to work. *Lactulose* is a liquid medicine. *Macrogol* is available as sachets of powder that are dissolved in water before use. *Lactitol* is chemically related to *lactulose* and is available as sachets. The contents of the sachet are sprinkled on food or taken with liquid. One or two glasses of fluid should be taken with the daily dose. *Lactulose* and *lactitol* can cause flatulence, cramps and abdominal discomfort.

Epsom salts (*magnesium sulphate*) is a traditional remedy that, while no longer recommended OTC, is still requested by some older customers. It is still used by secondary care as a bowel preparation prior to colonoscopy or bowel surgery.

Glycerine suppositories have both osmotic and irritant effects, and usually act within 1 h. They are licensed for occasional use only and should not be regarded as a ‘standard therapy’, but can sometimes be useful. They may cause rectal discomfort. Moistening the suppository before use will make insertion easier. Some people do not like the idea of using them.

Stimulant laxatives – senna, sennosides, bisacodyl and sodium picosulfate

Following the MHRA review, the indication for stimulant laxatives is now ‘for the short-term relief of occasional constipation’ only. They should be used for a maximum of 1 week. They should not be used in children younger than 12 years except following medical assessment. Stimulant laxatives work by stimulating nerves in the colon and rectum and increasing peristalsis. All can produce griping/cramping pains. It is advisable to start at the lower end of the recommended dosage range, increasing the dose if needed. The intensity of the laxative effect is relative to the dose taken. Stimulant laxatives work within 6–12 h when taken orally. *Bisacodyl* tablets are enteric coated and should be swallowed whole because *bisacodyl* is irritant to the stomach. If it is given as a suppository, the effect usually occurs within 1 h and sometimes as soon as 15 min after insertion.

Stool softeners – docusate

Docusate sodium lowers the surface tension at the oil–water interface of the faeces, enabling water and lipids to enter and soften the stool, making it easier to pass and reducing straining. *Docusate sodium* also has stimulant effects and acts within 1–2 days.

Constipation in children

Parents sometimes ask for laxatives for their children. Fixed ideas about regular bowel habits are often responsible for such requests. Numerous factors can cause constipation in children, including a change in diet and emotional causes. Unprocessed bran should not be given to children. Simple advice about sufficient dietary fibre and fluid intake may be all that is needed. Making sure that the child can place their feet flat on the floor or on a step when on the toilet will also help. Referral to the doctor would be best if these measures are unsuccessful.

Several laxatives and suppositories are available OTC to treat constipation in children. It is sensible not to recommend use of *any* laxative unless children have first been assessed by the health visitor or doctor. Following the MHRA guidance in 2020, stimulant laxatives should no longer be supplied OTC for use by children under the age of 12 unless they have had a medical assessment.

Constipation in pregnancy

Constipation commonly occurs during pregnancy; hormonal changes are responsible for this, and it has been estimated that one in three pregnant women suffers from constipation. Dietary advice concerning the intake of plenty of high-fibre foods and fluids can help. Oral *iron*, often prescribed for pregnant women, may contribute to the problem.

Stimulant laxatives are best avoided during pregnancy; bulk-forming laxatives are preferable, although they may cause some abdominal discomfort to women when used late in pregnancy (see Chapter 6: Women's Health: Common symptoms in pregnancy).

Constipation in older people

Constipation is a common problem in older people for several reasons, such as:

- They are less likely to be physically active.
- They may have poor natural teeth or have false teeth and avoid high-fibre foods that are more difficult to chew.
- They may not drink enough fluids, especially if there are problems, such as difficulty in getting to the toilet quickly enough.
- Other medical conditions, including frailty, may predispose to constipation, and associated multidrug regimens are more likely to cause drug-induced constipation.

Ideas about what constitutes a normal bowel habit may be different in older patients than in younger people and a careful history is required. If medication is a suspected cause, this should be discussed with the prescriber. If a bulk laxative is to be recommended for an elderly patient, it is important that the pharmacist gives advice about maintaining fluid intake to prevent the possible development of intestinal obstruction.

PRACTICAL POINTS

Laxative overuse

There are two main groups of patients who are likely to overuse laxatives: those with chronic constipation who get into a vicious circle by using stimulant laxatives, which eventually results in damage to the nerve plexus in the colon and will aggravate constipation; and those who take laxatives in the belief that they will control weight. The latter group includes those people who are dieting or, more seriously, people with eating disorders (anorexia nervosa or bulimia), who take very large quantities of laxatives. The pharmacist is in a position to monitor purchases of laxative products and counsel patients as appropriate. Any patient who is ingesting large amounts of laxative agents should be sensitively advised that they should seek medical help. If an eating disorder is suspected, they can also be directed to support organisations, such as Beat (formerly Eating Disorders Association).

Fluid and caffeine intake

Research shows that by increasing fluid intake in someone who is not well hydrated, the frequency of bowel actions can be increased. It is particularly effective when it is increased alongside an increase in dietary fibre. This can be difficult for some people, such as the frail and elderly. The NHS recommends drinking the equivalent of 6–8 glasses of water (based on a 250-ml glass). It is important to remind patients that tea, coffee, soft drinks, fruit, vegetables, soups, milk on cereals and in milky drinks, all contain water that should be counted in this daily total. A teacup typically holds 150 ml of fluid and a mug 350 ml.

Caffeine can stimulate gut muscles to contract, leading to a bowel motion; however, it can also aggravate constipation by contributing to dehydration. Patients should therefore avoid excessive intake of caffeine in coffee, tea and soft drinks.

Improving toilet routine

Toilet routine is a lifestyle aspect that may be neglected. Patients should be encouraged to give themselves plenty of time to use the toilet so that they are not rushed. They should not delay when they get the urge to use the toilet (the 'call to stool') as this delay results in more water being absorbed by the bowel and the stool becoming drier and harder to pass. There is some evidence that going to the toilet is easier with the knees raised above the hips, and the use of a low stool (e.g. Squatty Potty) while on the toilet has been shown to reduce straining and the time taken to move the bowels.

CONSTIPATION IN PRACTICE

Case 1

Mr Dabrowski is a middle-aged man who occasionally visits your pharmacy. Today he complains of constipation, which he has had for several weeks. He has been having a bowel movement every few days; normally, they are every day or every other day. His motions are hard and painful to pass. He has not tried any medicines as he thought the problem would go away of its own accord. He has never had problems with constipation in the past. He has been taking *atenolol* tablets (50 mg) once a day for several years. He does not have any other symptoms, except for a slight feeling of abdominal discomfort. You ask him about his diet; he tells you that since he was made redundant from his job at a local factory 3 months ago when it closed, he has tended to eat less than usual; his dietary intake sounds as if it is low in fibre. He used to walk to work (about 20 min each way), but has now got out of the habit of daily walking and it feels like too much effort. He tells you that he has been applying for jobs, with no success so far. He says he feels really down and is starting to think that he may never get another job.

The pharmacist's view

Mr Dabrowski's symptoms are almost certainly due to the change in his lifestyle and eating pattern. Now that he is not working, he is likely to be less physically active and his eating pattern has probably changed. Based on what he has said, it sounds as if he is becoming depressed because of his lack of success in finding work. Constipation seems to be associated with depression, separately from the constipating effect of some antidepressant drugs.

It would be worth asking Mr Dabrowski if he is sleeping well (signs of clinical depression include disturbed sleep – either difficulty in getting to sleep or in waking early and not being able to get back to sleep). Weight can change either way in depression; some patients eat for comfort, while others find their appetite is reduced. Depending on his response, you might consider whether referral to his doctor is needed to enable assessment for depression.

To address the dietary problems, he could be advised to start the day with a wholegrain cereal and to eat wholemeal bread if he is willing to do so. You could use the table of fibre content of suggested foods (Table 3.3(b)) provided earlier in this section to discuss which ones he will include in his diet. He should increase his fibre intake until he passes soft stools regularly; the amount of fibre needed to produce this effect will vary markedly between patients. The increase in dietary fibre should be gradual; too rapid an increase can cause griping and wind. Mr Dabrowski also needs to make sure he has a good fluid intake. All types of drinks count, but too much caffeine may aggravate constipation.

He should be encouraged to exercise regularly, which may also help with his low mood. Trying to get back to walking on most days as he did when he was working would be beneficial.

To provide quick relief from the discomfort, a suppository of *glycerine* or *bisacodyl* could be recommended to produce a bowel evacuation. In the longer term, dietary changes provide the key. He should see the doctor if the suppository does not produce an effect; if it works but the dietary changes have not been effective after 2 weeks, he should go to his doctor. Mr Dabrowski's medication is unlikely to be responsible for his constipation because, although beta blockers can sometimes cause constipation, he has been taking the drug for over 1 year with no previous problems.

The doctor's view

The advice provided by the pharmacist is sensible. It is likely that Mr Dabrowski's physical and mental health has been affected by the impact of a significant change in his life. The loss of his job and the uncertainty of future employment will be a major and continuing source of stress. The fact that the pharmacist has taken time to check out how Mr Dabrowski has been affected will in itself be therapeutic. It also gives the pharmacist the opportunity to refer the case to the doctor if necessary; many people are reluctant to take problems with low mood to their doctor, but a recommendation from the pharmacist might make the process easier. Hopefully, the advice given for constipation will at least improve one aspect of his life. It seems like sound advice. If the constipation does not resolve within 2 weeks, Mr Dabrowski should see his doctor.

Case 2

The counter assistant asks the pharmacist to have a word with a young woman who is in the shop. She was recognised by the assistant as a regular purchaser of stimulant laxatives. The pharmacist explains to the woman that she needs to ask a few questions because regular use of laxatives may mean an underlying problem, which is not improving. The pharmacist suggests moving to the consultation room, which is quiet and private. In answer to questions, the patient tells the pharmacist that she diets almost constantly and always suffers from constipation. Her weight appears to be within the range for her height. The pharmacist shows her a body mass index (BMI) chart and works out with her where she is on the chart, which confirms initial concerns as her BMI is relatively low. However, the patient is reluctant to accept advice, saying that she definitely needs to lose some more weight. The pharmacist asks about diet, and she says that she has tried all sorts of approaches, most of which involve eating very little.

The pharmacist's view

Unfortunately, this scenario is common in community pharmacy, with many women who seek to achieve weight below the recommended range. The pharmacist can explain that constipation often occurs during dieting simply because insufficient bulk and fibre is being eaten to allow the gut to work normally. Perhaps, the pharmacist might suggest that she join a local weight management group, or if the pharmacy provides this service, offer it. If her weight is normal, or lower than normal, laxative misuse may be a sign of an eating disorder, and tactfully suggesting seeking medical advice may be required. Despite the pharmacist's advice, many customers will still wish to purchase laxatives, and the pharmacist will need to consider how to handle refusal of sales. Offering stimulant laxatives for sale by self-selection can only exacerbate the problems and make it more difficult to monitor sales and refuse them when necessary.

The doctor's view

This is obviously a difficult problem. It is inappropriate for the young woman to continue taking laxatives, and she could benefit from counselling. However, a challenge from the pharmacist could result in her simply buying the laxatives elsewhere, such as the supermarket. Although the pack size for general sales is now small (containing 20 standard-strength tablets or equivalent), people can purchase them from several outlets. If, as is likely, she has an eating disorder, she may have very low self-esteem and be denying her problem. Both these factors make it more difficult for the pharmacist to intervene most effectively. An ideal outcome would be appropriate referral, which would depend on local resources, but which might initially be to the doctor, or she could be advised to visit the Beat's website (`www.b-eat.co.uk`).

If she is seen by the doctor, an empathic approach is necessary. The most important thing is to give her full opportunity to say what she thinks about the problem, how it makes her feel and how it affects her life. Establishing a supportive relationship with resultant trust between patient and doctor is the major aim of the initial consultation. Once this has been achieved, further therapeutic opportunities can be discussed and decided on together.

Case 3

A man comes into the pharmacy and asks for some good laxative tablets. Further questioning by the pharmacist reveals that the medicine is for his dad who is aged 72 years. He does not know many details except that his dad has been complaining of increasing constipation over the last 2–3 months and has tried *senna* tablets without any benefit.

The pharmacist's view

Third-party or proxy consultations are often challenging because the person making the request may not have all the relevant information. However, in this case, the decision is quite clear. The patient needs to be referred to the doctor because of the recently developed history of the complaint and the unsuccessful use of a stimulant laxative. This man is of an age to be at risk of bowel cancer.

The doctor's view

Referral to the GP should be recommended. A glycerine suppository may be a safe treatment to use in the meantime. More information is needed to make an opinion and diagnosis, but a prolonged and progressive change in bowel habit is an indication for referral to hospital for further investigations as the man could have a colorectal cancer. The GP would need to gather more information about his symptoms and would perform an examination that would include abdominal palpation and a digital rectal examination. The latter examination is necessary to exclude a rectal or anal tumour. It is likely that an urgent referral would then be made for further investigations as an outpatient. At hospital, the investigations would usually include a colonoscopy. In colonoscopy, a flexible fibre-optic tube is passed through the anus and then up and around the whole of the large bowel to the caecum. Computed tomography colonography, which can give good pictures of the bowel lining and is less invasive than a colonoscopy, is becoming more widely used.

DIARRHOEA

Community pharmacists may be asked about treatment or to offer advice on what to do should diarrhoea occur, e.g. when on holiday. It is also useful to advise patients on preventing 'traveller's' diarrhoea. Diarrhoea is defined as an increased frequency of bowel evacuation, with the passage of abnormally soft or watery faeces. The basis for treatment is electrolyte and fluid replacement; in addition, antidiarrhoeal drugs may be useful in some adults and older children.

What you need to know

- Age
    - Infant, child, adult or older person
- Duration
- Severity
- Symptoms and associated symptoms
    - Nausea/vomiting
    - Fever

Abdominal cramps
Flatulence
Blood
Other family members affected?
Previous history
Recent travel abroad?
Causative factors
Medication
Medicines already tried
Other medicines being taken
Antibiotic use?

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Particular care is needed in the very young and the very old. Infants (younger than 1 year) and older people are especially at risk of becoming dehydrated.

Duration

Most cases of diarrhoea will be acute and self-limiting. Because of the dangers of dehydration, it would be wise to refer infants with diarrhoea of longer than 1 day to the doctor.

Severity

The degree of severity of diarrhoea is related to the nature and frequency of stools. Both these aspects are important, since misunderstandings can arise, especially in self-diagnosed complaints. Older people who complain of diarrhoea may, in fact, be suffering from faecal impaction with passage of liquid around the solid stool; they may pass liquid motions, but only once or twice a day.

Symptoms

Acute diarrhoea arising from infection is usually rapid in onset and produces watery stools that are passed frequently. Abdominal cramps, flatulence and weakness or malaise may also occur. Nausea and vomiting may be associated with diarrhoea, as may fever. The pharmacist should always ask about vomiting and fever in infants; both will increase the likelihood that severe dehydration will develop. Another important question to ask about diarrhoea in infants is whether the baby has been taking milk feeds and other drinks as normal. Reduced fluid intake predisposes to dehydration.

The pharmacist should question the patient about food intake and also about whether other family members or friends are suffering from the same symptoms, since acute diarrhoea is usually due to an infection. Often, there are localised minor outbreaks of gastroenteritis (often called diarrhoea and vomiting or 'D & V'), and the pharmacist may be asked several times for advice and treatment by different patients during a short period of time. Types of infective diarrhoea and what to do if these are suspected are discussed later in this section.

The presence of blood or mucus in the stools is an indication for referral. Diarrhoea with severe vomiting or a high fever would also require medical advice.

Previous history

A previous history of diarrhoea or a prolonged change in bowel habit would warrant referral for further investigation; therefore, it is important that the pharmacist distinguish among acute, persistent and chronic conditions. Persistent diarrhoea (with a duration of more than 2 weeks) may be caused by bowel conditions, such as Crohn's disease, IBS or ulcerative colitis, and requires medical advice. Chronic diarrhoea is where the condition goes on for 5 weeks or longer.

Recent travel abroad

Diarrhoea in a patient who has recently travelled abroad requires referral since it might be infective in origin. Giardiasis should be considered in travellers recently returned from South America or the Far East.

Causes of diarrhoea

Infections

Most cases of diarrhoea are short lived, with the bowel habit being normal before and after. The term gastroenteritis is used to describe gut infection with viruses, bacteria or parasites, which is characterised by the sudden onset of diarrhoea, with or without vomiting.

Viral

Viruses are often responsible for gastroenteritis; the main ones are rotavirus and norovirus:

Rotavirus: Oral rotavirus immunisation has recently been introduced for young babies, so infection is now much less common. In infants, the virus mainly gains entry via the faecal–oral route or sometimes through the air from sneezing and coughing. The infection starts abruptly, and fever and vomiting often precede diarrhoea. The acute phase is usually over within 2–3 days, although diarrhoea may persist for up to a week. While the majority of infections are usually not too severe and are self-limiting, it should be remembered that rotavirus infection can cause severe illness and even death; it is one of the main causes of death in children in developing countries. Severe illness in the UK is most likely in those infants who have other illnesses or who are malnourished or living in poor social circumstances; it is less common in those who are breastfed.

Norovirus: This is another common cause of viral gastroenteritis in people of all ages. It can occur in clusters or 'mini' epidemics, such as on hospital wards or in schools, and is more common in winter. It is sometimes called 'the winter vomiting bug'. In the UK, up to 1 million people are affected by the problem each year. The virus is readily spread by contact with another person, through contaminated food or surfaces contaminated with vomit. After an incubation of up to 48 h, the illness begins suddenly with profuse vomiting, diarrhoea and flu-like symptoms. It usually settles in 2–3 days and treatment includes the usual advice on fluid replacement. As with all cases of gastroenteritis, prevention of spread is very important, and careful handwashing procedures and hygiene measures are essential. Norovirus rarely causes significant harm except in those who are very old or frail. A useful patient information leaflet is available from: `www.patient.info/health/norovirus-leaflet` (accessed 17 March 2021).

Bacterial

These illnesses mostly take the form of food-borne infections, also known as food poisoning, where food or water is contaminated with bacteria and/or the toxins they produce. The typical symptoms include severe diarrhoea and/or vomiting, with or without abdominal pain. They often occur in clusters following catered events or barbecues where food has become contaminated or has been inadequately cooked. If these illnesses are diagnosed or suspected, patients should be advised to see their doctor; they are 'notifiable' diseases, and the local health protection unit should be informed about them by the GP surgery.

Table 3.4 summarises the typical features of some of the following illnesses:

The two most commonly seen food-borne bacterial infections in the UK are *Campylobacter* and *Salmonella*, which are often associated with contaminated poultry, although other meats have been implicated. Raw eggs have also been found to be a source of *Salmonella*. Kitchen hygiene and thorough cooking are of great importance in preventing infection.

Bacillus cereus is usually associated with contaminated cooked foods where there has been inadequate temperature control that has allowed bacterial growth when stored. It is seen with reheated rice, pasta, meat or vegetable dishes, and dairy products.

TABLE 3.4 Features of some bacterial illnesses causing diarrhoea

Bacteria	Incubation	Duration	Symptoms
Staphylococcus	2–6 h	6–24 h	Severe, short lived; especially vomiting
Salmonella	12–24 h	1–7 days	Mainly diarrhoea
Campylobacter	2–7 days	2–7 days	Diarrhoea with abdominal colic
Bacillus cereus	1–5 h	6–24 h	Vomiting
Bacillus Cereus (second type of infection)	8–16 h	12–24 h	Diarrhoea
Listeria monocytogenes	3–70 days		Flu-like, diarrhoea

Clostridium perfringens is another common cause of outbreaks. It is also usually caused by inadequate storage and insufficient reheating of contaminated meat dishes or cooked meats or meat products, e.g. in institutional catering settings.

Bacillary dysentery is caused by *Shigella*. It can occur in outbreaks where there are people living in close proximity and may occur in travellers who have been to Africa or Asia.

Escherichia coli infections can be severe with toxins being released into the body, which can cause kidney failure.

Listeria monocytogenes can cause gastroenteritis or a flu-like illness. On occasion, it can be more severe and cause septicaemia or meningitis, with a significant mortality rate. Pregnant women are more susceptible to it, but it is still a rare infection occurring in 1 in 20,000 pregnancies. Infection during pregnancy can cause miscarriage, stillbirth or an infection of the newborn. Foods to be avoided during pregnancy include unpasteurised cheese, soft ripe cheeses, blue-veined cheeses, pates, cold cuts of meat and smoked fish. Care needs to be taken with the storage and handling of chilled ready-to-eat food in the home. Pregnant women with diarrhoea or fever should be referred immediately to their midwife or GP.

Antibiotics are generally unnecessary to treat gastroenteritis or food poisoning as most infections will resolve spontaneously. The most important treatment is adequate fluid replacement. Antibiotics are used for *Shigella* infections and sometimes the more severe or persistent *Salmonella* or *Campylobacter* cases. *Ciprofloxacin* has often been used in such circumstances, although increasing antibiotic resistance is a concern and other treatments may be needed.

Protozoa

Protozoan infections are uncommon in Western Europe, but they may also occur in travellers from further afield. Examples include *Cryptosporidium*, *Entamoeba* *histolytica* (amoebic dysentery) and *Giardia lamblia* (giardiasis). Diagnosis is made by sending stool samples to the laboratory. Treatment is usually with *metronidazole*.

Persistent or chronic diarrhoea

Persistent, chronic or recurrent diarrhoea may be due to an irritable bowel or, more seriously, a bowel tumour, an inflammation of the bowel (e.g. ulcerative colitis or Crohn's disease), an inability to digest or absorb food (i.e. malabsorption, e.g. coeliac disease) or diverticular disease of the colon.

Antibiotics and Clostridioides difficile (Clostridium difficile)

Diarrhoea occurs in around 10% of people taking antibiotics. If severe, it may require the course of antibiotics to be stopped. About a quarter of cases of antibiotic-associated diarrhoea are serious and due to *Clostridioides difficile* (formerly known as *Clostridium difficile)*. Many people carry small amounts of this bacteria in their gut, and as it is resistant to many antibiotics, the antibiotic kills off other flora in the gut and allows the *Clostridioides difficile* to flourish. Some strains of *Clostridioides difficile* produce a toxin that damages the large bowel lining, which results in profuse watery diarrhoea. These strains can get passed to other patients if scrupulous handwashing and careful hygiene practice is not followed. In hospitals, this is called nosocomial spread.

People who are most susceptible to *Clostridioides difficile* are those who are already weakened by age or illness. Factors that increase the risk of *Clostridioides difficile* infection include advanced age and underlying morbidity, such as abdominal surgery, cancer and chronic renal disease. Use of PPIs is a risk factor, as is previous multiple courses of antibiotics or concurrent multiple antibiotics. In fitter, mobile people, the infection causes protracted unpleasant diarrhoea lasting a few weeks; however, in debilitated people, the complications of *Clostridioides difficile* infection can be more severe and include dehydration, perforation of the colon, sepsis and even death. Usually, it can be treated by careful attention to rehydration. Antidiarrhoeal medication, such as *loperamide*, should not be used as this can aggravate the condition. If the diagnosis is confirmed using a stool sample to test for *Clostridioides difficile* toxin, an antibiotic, such as *metronidazole* or *vancomycin*, which *Clostridioides difficile* is sensitive to, may be used.

If pharmacists see a case of persistent diarrhoea following a course of antibiotics, they should ask the patient to get in touch with the GP surgery. Initially, telephone advice should be sought as it is better if the potential infection is kept away from the surgery. Another thing to watch out for is people who have a recurrence of diarrhoea after treatment for *Clostridioides difficile*; unfortunately, recurrence is common and may need further treatment. PPIs should be avoided in people who have had *Clostridioides difficile* infection as they can trigger recurrence.

Irritable bowel syndrome (IBS) – see also next section in this chapter

IBS is a non-serious, but troublesome, condition and is one of the more common causes of recurrent bowel dysfunction, including diarrhoea. There is no blood present within the motion in IBS. Bloody diarrhoea may be a result of an inflammation or tumour of the bowel and always requires urgent referral. The latter is more likely with increasing age (from middle age onwards) and is likely to be associated with a prolonged change in bowel habit; in this case, diarrhoea might sometimes alternate with constipation.

Medication

Medicines already tried

The pharmacist should establish the identity of any medication that has already been taken to treat the symptoms to assess its appropriateness.

Other medicines being taken

Details of any other medication being taken (both OTC and prescribed) are also needed, as the diarrhoea may be drug induced (Table 3.5). OTC medicines should be considered; commonly used medicines, such as magnesium-containing antacids

TABLE 3.5 Some drugs that commonly cause diarrhoea

Antacids: *magnesium salts*
Antibiotics
Colchicine
Cytotoxic drugs: *methotrexate*
Digoxin (toxic levels)
Diuretics (*furosemide*)
Iron preparations
Laxatives
H_2 antagonists
Misoprostol
NSAIDs
PPIs
SSRIs

and iron preparations, are examples of medicines that may induce diarrhoea (although iron also commonly causes constipation). Laxative abuse/overuse should be considered as a possible cause.

When to refer

Dehydration suspected

Diarrhoea of greater than

- 1 day's duration in children younger than 1 year
- 2 days' duration in children under 3 years of age and elderly patients
- 3 days' duration in older children and adults

Severe vomiting, or vomiting lasting for more than 1–2 days

Persistent diarrhoea after a course of antibiotics

Feverish, high temperature

Suspected outbreak of 'food poisoning'

Recent travel abroad

Suspected drug-induced reaction to prescribed medicine

History of change in bowel habit

Presence of blood or mucus in the stools

Elderly, frail or with underlying significant health problem

Weak immune system, such as due to HIV, chemotherapy or long-term corticosteroids

Pregnancy

Treatment timescale

Treatment timescale includes 1 day in children, otherwise 2 days.

MANAGEMENT

General advice on referral, fluids and food

Most people with gastroenteritis do not usually need to seek medical advice. Symptoms are often mild and commonly get better within a few days without treatment. Abdominal cramping or stomach ache may be a feature and *paracetamol* may help in this case. If vomiting occurs, it often lasts only a day or so, but sometimes longer. Diarrhoea may continue after the vomiting stops for a few days and loose stools may continue for a week or so further before a normal pattern returns. It used to be advised not to eat with gastroenteritis. However, it is now thought that eating small, light meals or soup, according to appetite, is not harmful. Most adults can do without food for a few days, if necessary. It is better to avoid fatty, spicy or heavy food.

Adults and older children should be advised to drink plenty of water to avoid dehydration. If diarrhoea is frequent, they should drink 200 ml of water, or more if diarrhoea is profuse, with each loose motion in addition to the amount they normally drink (which may be more than 2 l if the weather is hot). Drinks that are fizzy or sugary may make diarrhoea worse.

See Table 3.6 for symptoms and signs of dehydration in adults and children, and when to seek medical assistance. See also, ‘Does your child have a serious illness?’ in Chapter 10 on Childhood disorders.

NICE advises that factors associated with high risk of dehydration in children are:

- Children younger than 1 year of age, particularly younger than 6 months
- Infants who were of low birth weight
- Children who have passed more than five diarrhoeal stools in the previous 24 h

TABLE 3.6 Symptoms and signs of dehydration

Dehydration in adults (urgent referral)	**Dehydration in children (urgent referral)**
• Tiredness • Dizziness or light-headedness • Headache • Muscular cramps • Sunken eyes • Passing little urine • A dry mouth and tongue • Weakness • Becoming irritable	• Appears unwell • Passing little urine • A dry mouth • A dry tongue and lips • Fewer tears when crying • Sunken eyes • Weakness • Being irritable or lacking in energy (lethargic)
Severe dehydration in adults (immediate medical attention)	**Severe dehydration in children (immediate medical attention)**
• Weakness • Confusion • Rapid heart rate • Coma • Producing very little urine	• Drowsiness • Pale or mottled skin • Cold hands or feet • Very few wet nappies • Fast (but often shallow) breathing

- Children who have vomited more than twice in the previous 24 h
- Children who have not been offered, or have not been able to tolerate, supplementary fluids before presentation
- Infants who have stopped breastfeeding during their illness
- Children with signs of malnutrition

Children who meet these criteria should also be considered for referral.

Rehydration should still be initiated even if referral to the doctor is thought to be necessary.

Oral rehydration solution

Oral rehydration solution (ORS) is considered to be the standard in the management for acute diarrhoea in babies and young children. It is also recommended for people who are over the age of 60, or who have frailty or underlying health problems. It may be advised in other people if dehydration is developing, or symptoms persist. ORS may be used with antidiarrhoeal drugs in older children and adults.

Sachets of ORS powder for reconstitution are available; these contain sodium and potassium salts along with glucose. Some contain rice starch instead of glucose. Intestinal absorption of sodium and water is enhanced by glucose and starch (carbohydrate). A variety of flavours are available.

Appropriate advice should be given by the pharmacist about how the powder should be reconstituted. Patients should be reminded that drinking water should be used to make the solution (never use fruit juices or carbonated drinks) and that boiled and cooled water should be used for children younger than 1 year. Boiling water should not be used. One sachet is mixed with 200 ml of water. The solution can be kept for 24 h if stored in a refrigerator. Fizzy, sugary drinks should never be used to make rehydration fluids, as they will produce a hyperosmolar solution that may exacerbate the problem. The sodium content of such drinks, as well as the glucose content, may be high.

Home-made salt and sugar solutions are not recommended, since the accuracy of electrolyte content cannot be guaranteed, and this accuracy is essential, especially in infants, young children and elderly patients. Special measuring spoons are available; their correct use would produce a more acceptable solution, but this use should be reserved for the treatment of adults, where electrolyte concentration is less crucial. They are commonly used in developing countries where access to pre-formulated products is limited.

Quantities of ORS

Parents sometimes ask how much ORS should be given to children. Guidance is provided with the sachets and this should be followed. This is extra fluid in addition to that normally consumed to replace losses from loose motions.

Once dehydration, or suspected dehydration, has been corrected rapidly over several hours by drinking plenty of ORS, further dehydration should be prevented by encouraging the patient to drink their normal volumes of fluid and by replacing continuing losses with an ORS. In infants, breastfeeding or formula feeds should be offered between ORS drinks.

Give ORS by mouth to correct continuing losses in the following volumes:

- **For Children of 1–11 months**
  1–1½ times usual feed volume
- **For Children of 1–11 years**
  200 ml, after every loose motion
- **For Children of 12–17 years**
  200–400 ml, after every loose motion, dose according to fluid loss
- **For Adults**
  200–400 mL, after every loose motion, dose according to fluid loss

Giving too much of the ORS will not harm the child (or adult), so it is better to give more rather than less. Discourage giving fruit juices and carbonated drinks until the diarrhoea has stopped.

Often, sickness and diarrhoea are seen together with gastroenteritis. If a child is vomiting as well as having diarrhoea, the advice is to give small amounts of ORS often (i.e. 10–20 ml every 5–10 min), as larger amounts may make the child sick. It is important that the full amount is still given.

Other therapies

Loperamide

Loperamide is an effective antidiarrhoeal treatment for use in older children and adults. It should not be used for longer than 2 days for diarrhoea. When recommending it, the pharmacist should remind patients to drink plenty of extra fluids. In addition, oral rehydration sachets may be recommended. *Loperamide* is contraindicated for OTC use in children under the age of 12 years. It should be avoided in bloody or suspected inflammatory diarrhoea (patients who have fever) and in cases of significant abdominal pain.

An obvious side effect is constipation. Sometimes, dizziness, headaches, flatulence and nausea are seen. Abdominal pain, drowsiness, dry mouth, dyspepsia, rash and vomiting are rarely reported.

An important caution is to advise the person not to exceed the recommended daily dose (12 mg for adults and 6 mg for those aged 12–18 years) as cardiac arrhythmia has been reported in association with overuse. A higher maximum daily dose (16 mg) can be given if supplied ‘on prescription’. For use of *loperamide* in IBS and restrictions for this indication, see information later in this chapter.

Kaolin

Kaolin has been used as a traditional remedy for diarrhoea for many years. Its use was justified on the theoretical grounds that it would absorb water in the GI tract and would absorb toxins and bacteria onto its surface, thus removing them from the gut. The latter has not been shown to be true and the usefulness of the former is questionable. The use of *kaolin*-based preparations has largely been superseded by oral rehydration therapy and *loperamide*, although patients may occasionally ask for *kaolin*.

Morphine

Morphine, in various forms, has been included in antidiarrhoeal remedies for many years. The doses included in OTC preparations are lower than those needed to slow the action of the GI tract. *Kaolin* and *morphine* mixture is listed by the BNF as being ‘Less suitable for prescribing’. It remains a choice for some patients, despite the lack of evidence of its effectiveness.

Probiotics

A systematic review concluded that probiotics probably make little or no difference to the number of people who have diarrhoea lasting 48 hours or longer, and the authors are uncertain whether probiotics reduce the duration of diarrhoea. This analysis was based on large trials with low risk of bias.

There is some evidence that specific strains of probiotics (*Lactobacillus rhamnosus* or *Saccharomyces boulardii*) can help prevent diarrhoea caused by antibiotics, and some people advocate particular types of probiotics to prevent *Clostridioides difficile*.

PRACTICAL POINTS

1. Patients with diarrhoea should be advised to drink plenty of clear, non-milky fluids, such as water and diluted squash. If the diarrhoea is severe, ORS may be useful.
2. ORS should be considered in people who are 60 years of age or older, frail, or with comorbidities, such as cardiovascular disease or thrombotic tendencies (e.g. with a history of deep vein thrombosis).

3. The patient can be advised to continue their usual diet, but fatty foods and foods with a high sugar content might be best avoided as they may not be well tolerated. Light soup is a good compromise.
4. Breastfeeding or bottle-feeding should be continued in infants; this should be supplemented with ORS. The severity and duration of diarrhoea are not affected if milk feeds are continued.
5. Hygiene is essential with diarrhoea. Advise family members to wash their hands thoroughly with soap and warm water after going to the toilet and before eating or preparing food. Clean the toilet, including the handle and the seat, with disinfectant, and avoid sharing towels, flannels, cutlery or utensils with others. It is a good idea to keep away from work or school for at least 48 h after diarrhoea has settled.
6. Patients often ask about what they can take on holiday with them in case of diarrhoea. *Loperamide* and ORS are useful first-aid items. Advice should be given about drinking bottled water if the quality of tap water is unknown and avoiding 'street food'. Useful information on travelling abroad and avoiding 'traveller's' diarrhoea can be found at `www.fitfortravel.nhs.uk/home` (accessed 17 March 2021).

DIARRHOEA IN PRACTICE

Case 1

Mrs Robinson asks what you can recommend for diarrhoea for her son David, aged 11 years. She is worried that her other two children, Natalie, aged 4 years, and Tom, aged just over 1 year, may also get it. David's diarrhoea started yesterday; he went to the toilet about five times and was sick once, but has not been sick since then. He has griping pains, but is generally well and quite lively. Yesterday, he had a pie his friend gave him during his lunch break at school. The pie had been in his locker for a few days! No one else in the family ate the same food. Mrs Robinson has not given him any medicine.

The pharmacist's view

It sounds as if David has a bout of acute diarrhoea, possibly caused by the food he ate yesterday during lunchtime. He has vomited once, but now the diarrhoea is the problem; the child is otherwise well. He is 11 years old, so the best plan would be to start oral rehydration with some proprietary sachets, with advice to his mother about how they should be reconstituted. If either or both the other children get diarrhoea, they can also be given some rehydration solution. David should see the doctor the day after tomorrow if his condition has not improved.

The doctor's view

David's diarrhoea could well be due to food poisoning. Oral rehydration is the correct treatment. He should also be told to avoid spicy or fatty foods for 24 h or so until the diarrhoea has settled; a light soup might be best. If he wants to drink other fluids in addition to the electrolyte mixture, he should be told to avoid milk because of the fat content in it. He should be given advice about storing food in a fridge!

His symptoms should settle down over the next few hours. If they persist or he complains of worsening abdominal pain, particularly in the lower right side of the abdomen, his mother should contact the doctor. An atypical acute appendicitis may sometimes present with symptoms of gastroenteritis.

Case 2

Mrs Choudry is collecting her regular repeat prescription for antihypertensive treatment. You ask how she and the family are, and she tells you that several members of the family have been suffering with diarrhoea on and off. You know that the family recently returned from a trip to India where they had been visiting relatives to attend a family wedding. In answer to your questions, Mrs Choudry tells you that the problem with the diarrhoea started shortly after they returned.

The pharmacist's view

In this case, referral to the GP is needed as the diarrhoea may be related to the recent travel.

The doctor's view

Referral is a sensible course of action. Clearly, more information is required, e.g. the date of onset of symptoms and the date of return to the UK. It does not sound as if any of the family members are acutely ill, but it would be necessary to ensure that no one is dehydrated. If the diarrhoea is still present, it would be helpful to send stool samples to the microbiology laboratory for analysis. If a cause for the infection is found, the local health protection unit should be notified. It is possible that they may be suffering from giardiasis, which can be treated with *metronidazole*. Sometimes, stool samples come back showing no signs of infection, in which case the diarrhoea is considered as being due to post-infection irritability of the bowel. This usually resolves spontaneously with no specific treatment.

Case 3

Mrs Jean Berry wants to stock up on some medicines before her family sets off on their first holiday abroad; they will be going to Morocco next week. Mrs Berry tells you that she has heard of people whose holidays have been ruined by holiday diarrhoea, and she wants you to recommend a good treatment. On questioning, you find out that Mr and Mrs Berry and their two boys aged 10 and 14 years will be going on the holiday.

The pharmacist's view

Holiday diarrhoea can often easily be dealt with. Mrs Berry could be advised to buy some *loperamide* capsules, which would be suitable treatment for her, Mr Berry and their 14-year-old son (but not for the 10-year-old son). In addition, she should purchase some oral rehydration sachets for the younger son. The sachets could also be used by other family members, if needed.

The pharmacist could give some valuable advice about the avoidance of potential problems by the Berry family on their first foreign holiday. Fresh fruit should be peeled before eating, and hot food should not be eaten other than in restaurants; roadside snack stalls are best avoided. The question of the quality of drinking water often crops up. Good advice to travellers would be to check with the tour company representative as to the advisability of drinking local water. If in doubt, bottled mineral water can be drunk; such water (still rather than sparkling) should also be used to reconstitute rehydration sachets. Ice in drinks may be best avoided, depending on the water supply.

Holiday diarrhoea is common, but is usually self-limiting. If it is still present after several days, medical advice should be sought. If the diarrhoea persists or is recurrent after returning home, the doctor should be seen. Finally, patients would be well advised to be wary of buying OTC medicines abroad. In some countries, a large range of drugs, including oral steroids and antibiotics, can be purchased OTC. An example is that each year, patients return to Britain with serious adverse effects following the use of oral *chloramphenicol* that has been prescribed or purchased.

The doctor's view

The pharmacist has covered all the important points. The most likely cause of diarrhoea would be contaminated food or water. The best initial treatment of acute diarrhoea in older children and adults is to drink plenty of bottled water (with or without electrolyte reconstitution powders). It would be sensible to take an antidiarrhoeal drug, such as *loperamide*.

Case 4

Mr Radcliffe is an elderly man aged 86 who lives alone. Today, his home help asks what you can recommend for diarrhoea, from which Mr Radcliffe has been suffering for 3 days. He has been passing watery stools quite frequently and feels rather tired and weak. He has sent the home help because he dare not leave the house and go out of reach of the toilet. You check your patient medication records, which confirm your memory that he takes several different medicines, namely *digoxin*, *furosemide* and *paracetamol*. Ten days ago, you dispensed a prescription for a course of *amoxicillin*. The home help tells you that he has been eating his usual diet and there does not seem to be a link between food and his symptoms.

The pharmacist's view

Mr Radcliffe's diarrhoea may well be due to the *amoxicillin* and it sounds as if this may have caused a *Clostridioides difficile* infection. It would be best to call the patient's doctor to discuss the appropriate course of action because Mr Radcliffe's other drug therapy means that fluid loss and dehydration may cause electrolyte imbalance and put him at further risk. He will probably need a home visit as he cannot get out.

The doctor's view

Although antibiotics can cause diarrhoea when they are being taken, this is rarely severe and stops when the course of treatment ceases. It is more likely that the *amoxicillin* has triggered a *Clostridioides difficile* infection. The most important consideration in management is to ensure adequate fluid and electrolyte replacement. This is particularly so as older people (and babies) are not as resilient to the effects of dehydration. In Mr Radcliffe's case, things are further complicated by his other medication, i.e. *furosemide* and *digoxin*. He is not on any potassium supplement or a potassium-sparing diuretic. Although there may be good reason for this, diuretics, such as *furosemide*, can lower the plasma potassium level and make *digoxin* potentially toxic. Unfortunately, potassium can also be lost in diarrhoea, further aggravating this problem. He needs an urgent assessment and a home visit is warranted; this is also a good idea in any case to keep *Clostridioides difficile* 'away from the surgery'. He needs a blood test for renal function and potassium and an urgent stool test to look for the *Clostridioides difficile* toxin. If he seems very ill, or dehydrated, he will need to be admitted to hospital. A further problem is that such an admission may require to be to an isolation ward.

Antibiotics upset the normal bowel flora allowing *Clostridioides difficile* to flourish. *Clostridioides difficile* releases a toxin into the large bowel that damages the bowel lining and causes fluid leakage. This condition can be caused by most antibiotics, but has been reported more often with *clindamycin*, *amoxicillin* and the cephalosporins. The condition is more likely to occur in those over the age of 65 years. It is often seen in hospitals where it is thought that the infection can be spread by health workers. However, a third of new cases arise in the community.

The diarrhoea of *Clostridioides difficile* infection can range from mild self-limiting symptoms to severe protracted or recurrent episodes and can sometimes be fatal; this is most common in people already debilitated by illness. There is often a low-grade fever, and abdominal pain/cramps may occur. The symptoms usually begin within 1 week of starting antibiotic treatment, but may start up to 6 weeks after a course of antibiotics. It is sometimes necessary to treat severe cases with fluid replacement and *metronidazole*, *fidaxomicin* or *vancomycin*. Even if treated, recurrence is common, particularly if further antibiotics are used.

IRRITABLE BOWEL SYNDROME

At any one time, as many as 1 in 10 people have symptoms of IBS. It mainly affects younger adults and is more common in women. Many patients have intermittent symptoms over many years. The three main features are abdominal pain, change in stool consistency and abdominal bloating. Constipation is a common problem. In many, the discomfort is associated with, or relieved by, defaecation. Many patients have investigations at the onset of their symptoms, but no abnormalities are found.

The cause is unknown, although it is sometimes related to particular foods, and is often precipitated or aggravated by stress. A theory is that it occurs due to mis-communication between the brain and the gut, and that gut co-ordination is affected (dysmotility) and is hypersensitive to stretching, which causes pain.

Many IBS sufferers have symptoms of anxiety and depression. Some sufferers may have food intolerance that triggers their symptoms. When a patient first presents with symptoms, referral to the GP surgery is indicated so that potentially serious causes can be ruled out. Once an IBS diagnosis has been made, pharmacy management is appropriate and also convenient for the patient.

What you need to know

- Age
  - Child or adult
- Symptoms
  - GI abdominal pain
  - Abdominal distension/bloating
  - Disturbed bowel habit; diarrhoea and/or constipation
  - Nausea
- Other symptoms
  - Urinary symptoms, especially frequency
  - Dyspareunia (pain during intercourse)

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Because of the difficulties in diagnosis of abdominal pain in children, it is best to refer such cases.

IBS usually develops in young adult life. It is most common in people between the age of 20 and 30 and affects twice as many women as men. If an older adult presents for the first time with no previous history of bowel problems, a referral should be made.

Symptoms

IBS has three key symptoms, which include abdominal pain (which may ease following a bowel movement), abdominal distension/bloating and disturbance of bowel habit.

Abdominal pain

The pain can occur anywhere in the abdomen. It is often central or left sided and can be severe. When pain occurs in the upper abdomen, it can be confused with peptic ulcer or gall bladder pain. The site of pain can vary from person to person and even for an individual. Sometimes, the pain comes on after eating, and a period of relief follows defaecation.

Bloating

A sensation of bloating is commonly reported. Sometimes, it is so severe that clothes have to be loosened.

Bowel habit

Diarrhoea and constipation may occur; sometimes, they alternate. A morning rush is common, where the patient feels an urgent desire to defaecate several times after getting up in the morning and following breakfast, after which the bowels may settle. There may be a feeling of incomplete emptying after a bowel movement. The motion is often described as loose and semi-formed rather than watery. Sometimes, it is like pellets or rabbit droppings or pencil shaped. There may be mucus present, but not blood.

Other symptoms

Nausea sometimes occurs; vomiting is less common.

Patients may also complain of apparently unrelated symptoms, such as backache, feeling lethargic and tired. Some patients get upper abdominal discomfort and indigestion; this is sometimes known as 'functional dyspepsia'. Urinary symptoms may be associated with IBS, e.g. frequency, urgency and nocturia (the need to pass urine during the night). Some women report dyspareunia.

Duration

Patients may present when the first symptoms occur or may describe a pattern of symptoms, which has been going on for months or even years.

Previous history

You need to know whether the patient has consulted his/her doctor about the symptoms and, if so, what they were told. Some patients will have had a lot of investigations in the past. A history of travel abroad and gastroenteritis sometimes appears to trigger an irritable bowel. Referral may be necessary to exclude an unresolved infection. Any history of previous bowel surgery would suggest a need for referral.

Aggravating factors

Stress appears to play an important role and can precipitate and exacerbate symptoms.

Caffeine often worsens symptoms, and its stimulant effect on the bowel and irritant effect on the stomach are well known.

The sweeteners sorbitol and fructose have also been reported to aggravate IBS. Other foods that have been implicated are milk and dairy products, chocolate, onions, garlic, chives and leeks.

Medication

The patient may already have tried prescribed or OTC medicines to treat the condition. You need to know what has been tried and whether it produced any improvement. It is also important to know what other medicines the patient is taking. In many patients, IBS is associated with anxiety and depression, but it is not known whether this is cause or effect.

When to refer

Children
Older person with no previous history of IBS
Pregnant women
Blood in stools
Unexplained weight loss
Caution in patients aged over 55 years with changed bowel habit
Symptoms/signs of bowel obstruction
Unresponsive to appropriate treatment

Treatment timescale

Symptoms should start to improve within 1 week.

MANAGEMENT

Diet

Patients with IBS should follow the recommendations for a healthy (low-fat, low-sugar and high-fibre) diet. NICE gives further practical guidance on diet and nutrition – see Table 3.7. Traditionally, patients with IBS were told to eat a diet high in fibre, and raw wheat bran was often recommended as a way of increasing

TABLE 3.7 IBS in adults – dietary advice (adapted from the NICE Clinical Guideline on IBS)

Diet and nutrition should be assessed for people with IBS and the following general advice given:

- Have regular meals and take time to eat
- Avoid missing meals or leaving long gaps between eating
- Drink at least eight cups of fluid per day, especially water or other non-caffeinated drinks, e.g. herbal teas
- Restrict the consumption of tea and coffee to three cups per day
- Reduce the intake of alcohol and fizzy drinks
- It may be helpful to limit intake of high-fibre food (such as wholemeal or high-fibre flour and breads, cereals high in bran and wholegrains, such as brown rice)
- Reduce intake of ‘resistant starch’ (starch that resists digestion in the small intestine and reaches the colon intact), which is often found in processed or re-cooked foods
- Limit fresh fruit to three portions per day (a portion should be ≈80 g)
- People with diarrhoea should avoid sorbitol, an artificial sweetener found in sugar-free sweets (including chewing gum) and drinks and in some diabetic and weight loss products
- People with wind and bloating may find it helpful to eat oats (such as oat-based breakfast cereal or porridge) and linseeds (up to one tablespoon per day)

the fibre intake. Unprocessed bran, which is an insoluble fibre, is now no longer recommended in IBS as evidence shows that it aggravates symptoms. Oats are more soluble than wheat bran and can be better tolerated.

Some patients find that excluding foods that they know exacerbate their symptoms is helpful (see ‘Aggravating factors’, described earlier in this chapter). The sweeteners sorbitol and fructose can make symptoms worse and they are found in many foods. The patient should check labels at the supermarket.

A recent review found that there was insufficient evidence to make a definitive recommendation about caffeine intake; reducing or cutting out caffeine consumption may be worth trying if symptoms appear to be related. Remind patients that caffeine is included in many soft drinks, and so they should check labels.

Radical dietary restrictions or a low FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides and polyol; which are short-chain carbohydrates) diet should only be considered under the supervision of a dietician – see ‘Practical points’, provided further in this chapter.

Exercise

There is limited evidence that increased physical activity improves IBS, but it will increase overall health and may act as a distraction; it is certainly useful for stress. It is worth advising people on healthy activities, such as regular walking, running/jogging or swimming, and on increasing the amount of exercise they get. Exercise as a component of relaxation is an important aspect of self-management.

Relaxation techniques

IBS is often associated with stress. Some patients find relaxation techniques helpful and some can reduce their stress and anxiety levels with cognitive behavioural therapy or mindfulness, which also reduces their IBS symptoms. Online resources, apps, videos, books and tapes are available to support these activities. The pharmacist may be able to signpost to counselling services and 'talking therapies', or the GP surgery may have access to these.

Drug treatments

Drug treatment for IBS is usually directed at the most predominant symptom; therefore, for example, patients with mainly constipation may be treated with laxatives, and patients with cramping pain with antispasmodics. The research into IBS provides limited evidence as drug trials are usually short (rarely more than 12 weeks) and there is often a strong placebo response, so differences between active treatment and placebo may be small. It is important to explain to patients that they may need to try various therapies until they find one or two that suit them the most.

Bulking agents

Bulking agents, such as *ispaghula husk*, containing soluble fibre can help some patients. It may take a few weeks of experimentation to find the dose that suits the individual patient. Remind the patient to increase fluid intake to take account of the additional fibre. Bulking agents are also available in combination with antispasmodics. The evidence of benefit is not strong, as studies have involved small numbers of patients.

Antispasmodics

Research trials show some improvement in abdominal pain with smooth muscle relaxants. Many of these trials also show a pronounced effect with placebo. Smooth muscle relaxants *alverine citrate*, *peppermint oil* and *mebeverine* and the antimuscarinic *hyoscine* are used. They work by a direct effect on the smooth muscle of the gut, causing relaxation and thus reducing abdominal pain. Reviews of evidence have found that there does not appear to be a difference in efficacy between antimuscarinics and smooth muscle relaxants.

The patient should see an improvement within a few days of starting treatment and should be asked to return to you in 1 week so that you can monitor progress. It is worth trying a different antispasmodic if the first has not worked.

Alverine citrate

Alverine citrate is given in a dose of 60–120 mg (one or two capsules) up to three times a day. If this is the first time the patient has had IBS symptoms, a doctor should confirm the diagnosis prior to the use of *alverine citrate*. Remind the patient to take the capsules with water and not to chew them.

Side effects are rare, but nausea, dizziness, pruritus, rash and headache have occasionally been reported. The drug should not be recommended for pregnant or breastfeeding women or for children. *Alverine citrate* is also available in a combination product with *sterculia* (see 'Bulking agents', described earlier in this chapter).

Peppermint oil

Peppermint oil has been used for many years as an aid to digestion and has an antispasmodic effect. In a systematic review, which identified nine studies evaluating 726 patients, *peppermint oil* was found to be significantly superior to placebo in improving IBS symptoms.

Capsules containing 0.2 ml of the oil are taken in a dose of one or two capsules three times a day, 15–30 min before meals. This treatment should not be taken by children. If this is the first time the patient has had IBS symptoms, a doctor should confirm the diagnosis prior to the use of *peppermint oil*. These capsules are enteric coated, with the intention that the *peppermint oil* is delivered beyond the stomach and upper small bowel. Patients should be reminded not to chew the capsules as not only will this render the treatment ineffective, but it will also cause irritation of the mouth and oesophagus.

Occasionally, *peppermint oil* causes heartburn and so is best avoided in patients who already suffer from this problem. Perianal irritation may occasionally occur with *peppermint oil*. Allergic reactions can occur and are rare; rash, headache and muscle tremor have been reported.

Mebeverine hydrochloride

Mebeverine hydrochloride is used at a dose of 135 mg three times a day. The dose should be taken 20 min before meals. If this is the first time the patient has had IBS symptoms, a doctor should confirm the diagnosis prior to the use of *mebeverine*.

The drug should not be recommended for pregnant or breastfeeding women, for children under 18 years of age or for patients with porphyria (which is very rare). Adverse effects are rare and include allergic reactions, angioedema, rash and urticaria.

Hyoscine

Hyoscine butylbromide 10-mg tablets can be used in adults and children aged over 6. On starting treatment, adults should take one tablet three times a day, increasing if necessary to two tablets four times a day. If this is the first time the patient has had IBS symptoms, a doctor should confirm the diagnosis prior to the use of *hyoscine*.

Hyoscine butylbromide is likely to cause antimuscarinic (anticholinergic) adverse effects (dry mouth, urinary symptoms, blurred vision, etc.) in middle-aged and older people. These adverse effects of *hyoscine* may intensify those of other antimuscarinic drugs, such as o*xybutynin* or *amitriptyline*, butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*). It is therefore important to determine the identity of any medicines currently being taken by the patient.

Loperamide

Use of OTC *loperamide* is appropriate only on an occasional, short-term basis to reduce diarrhoea or urgency of defaecation sometimes seen in IBS. In some small studies, *loperamide* improved diarrhoea, reducing frequency of bowel movements, but not abdominal pain or distension.

For use in IBS, *loperamide* is licensed for people aged 18 years and over, only where the diagnosis has previously been made by a doctor. The dose is two capsules (4 mg) taken initially, followed by one capsule (2 mg) after every loose stool. The maximum daily OTC dose should not usually exceed six capsules (12 mg) and a doctor should be consulted if these have been taken for longer than 2 weeks. Some patients titrate use according to the variation in their symptoms, or use it prior to a stressful event.

An obvious side effect is constipation. It is usually trouble free, but dizziness, headaches, flatulence and nausea are sometimes seen. Abdominal pain, drowsiness, dry mouth, dyspepsia, rash and vomiting are rarely reported. An important caution is to advise the person not to exceed the recommended daily dose or duration as cardiac arrhythmia has been reported in association with overdose.

PRACTICAL POINTS

Probiotics

Probiotics are preparations of live bacteria and yeasts taken as yoghurt or food supplements and are thought to have the potential to restore the balance of gut bacteria so that the gut functions more effectively. There is some limited evidence that they can help in IBS though it is unclear what types of probiotic are most effective. They do seem relatively harmless. Some products state that they are specifically for IBS.

Dieticians (and NICE) advise that if people wish to try probiotics, they should take them for at least 4 weeks and if they are ineffective, try another brand or stop them. GPs in England are encouraged not to prescribe them as part of the NHS OTC guidance.

There is also some evidence that probiotics may be useful in treating diarrhoea associated with antibiotics and reduce persistent symptoms after gastroenteritis. This is sometimes a trigger for IBS; see also the Diarrhoea section in this chapter.

FODMAPs

There is some evidence that a diet low in FODMAPs can help some people with IBS. FODMAPs are poorly absorbed simple and complex sugars that are found in some fruits and vegetables, milk and wheat. They are fermented by bacteria in the colon, releasing gas that it is thought stretches the bowel causing bloating, wind and pain in those susceptible to IBS. Awareness of FODMAPs can enable patients with IBS to consider making some modifications to their diet by reducing their consumption. However, NICE do advise that advice on this diet should only be given by a healthcare professional with expertise in dietary management; if patients wish to pursue this, they should discuss with their doctor who may consider referral to a dietician.

Complementary therapies

Studies have shown that hypnotherapy may be of benefit in IBS. If patients want to try this, they should consult a registered hypnotherapist. A systematic review of biofeedback concluded that there is insufficient evidence to warrant recommendation, but that given the positive results reported in small trials to date, biofeedback deserves further study in people with IBS. Others may benefit from traditional acupuncture, reflexology, aromatherapy or homoeopathy, although NICE specifically advises that use of acupuncture and reflexology should not be encouraged.

IRRITABLE BOWEL SYNDROME IN PRACTICE

Patient perspectives

At the beginning of this year, I was diagnosed with IBS. Looking back, it been coming on for a couple of years. Now, I have to think every day about what food and drink I put into my gut. It seems a bit unfair for a 50-year-old man who has previously enjoyed any food or drink put in front of him! Recently, I was mortified to have an episode of diarrhoea just before boarding a plane to go on holidays – I must have been anxious about flying; I got to the loo but it was a close thing.

Once I started talking about IBS to friends and relatives, I found that there are a few who also have it (I did not know before). They were relieved to be able to discuss it and shared their experience and top tips. We all seem to be different as to just what sets it off, the time period between onset and finish, who gets constipated and who gets loose, and mucus or not. I am slowly learning what I can eat and cannot eat (and drink) to help me understand 'MY' problem. I now take *loperamide* if I get the sensation of bowel urgency before a stressful event.

For the first few months, I kept a diary of everything I ate or drank, the times and the outcome. I have had to change my drinking and eating habits and found it helps not to fill my stomach but take smaller bits and pieces over the course of a day. The doctor suggested anti-anxiety pills, but I decided not to take them for now. She printed me a leaflet about a way to help myself relax when stressed and advice on exercise. Gradually, I feel that I am getting on top of it so long as I keep my 'maintenance' up.

Case 1

Joanna Mathers is a 29-year-old woman who asks to speak to the pharmacist. She has seen an advertisement for an antispasmodic for IBS and wonders whether she should try it. On questioning, she tells you that she has been getting stomach pains and bowel symptoms for several months, two or three times a month. She thinks her symptoms are associated with business lunches and dinners at important meetings and include abdominal pain, a feeling of abdominal fullness, diarrhoea, nausea and sometimes vomiting. In answer to your specific question about morning symptoms, Joanna says that sometimes she feels the need to go to the toilet first thing in the morning and may have to go several times. Sometimes, she has been late for work because she felt she could not leave the house due to the diarrhoea. Joanna tells you that she works as a marketing executive and that her job is pressurised and stressful when there are big deadlines or client meetings. Joanna drinks six or seven cups of coffee a day and says her diet is 'whatever I can get at work and something from the freezer when I get home'. She is not taking any other medicines and has not been to the doctor about her problems as she did not want to bother him.

The pharmacist's view

The picture that has emerged indicates IBS. She has the key symptoms and there is a link to stress at work. Before taking an antispasmodic for the first time, she should discuss her problems with a doctor to confirm the diagnosis. At this stage, it might be worth advising her on exercise and relaxation exercises and trying to reduce her work stress. If the doctor agrees with the highly likely diagnosis of IBS, she could try an antispasmodic (such as *peppermint oil* or *mebeverine*) for 1 week and then review how she has got on at the end of that time. She also needs a careful explanation of aggravating factors for IBS and might want to try a gradual reduction in her intake of coffee. If she decides on an antispasmodic and there is no improvement, a different one could be tried for a further week. She would need to see a doctor again if all this does not help and she wants further treatment.

The doctor's view

Joanna gives a clear history of IBS. A referral would give her doctor an opportunity to help further with her concerns about what was wrong, confirm the diagnosis and give her further advice on IBS. A trial of an antispasmodic is reasonable. The doctor would also want to give some time to consider her work pressures and advise on how these might be addressed. Some employers provide access to occupational health services that can advise on reducing stress in the workplace. Plenty of information on IBS (and stress) is available on the web, which she could be advised to look at, e.g. NHS Health A–Z. The pharmacist is also in a good position to provide support and advice on medication use.

Case 2

Jane Abara asks to see the pharmacist. She is in her early 20s and says she has been getting some upper abdominal pain after eating food. She wants to try a stomach medicine. On further questioning, she says that she has had an irritable bowel before, but this is different, although she does admit that her bowels have been troublesome recently and she has noticed some urinary frequency. Jane says that she has been constipated and felt bloated. She says that she went to her doctor last year and was told she had IBS. The doctor said it was all due to stress, which had upset her. Over the last year, she has started a new job and moved into new accommodation. She eats a healthy diet and exercises regularly.

The pharmacist's view

The history here is not straightforward, and although Jane's symptoms are indicative of IBS, which she says she has had before, the symptoms are different on this occasion. The best course of action is to refer her to the doctor for further investigation.

The doctor's view

Jane probably has IBS, but there is insufficient information so far to make that diagnosis. It is not uncommon to have upper abdominal pain with IBS, but other possibilities also need to be considered. It sounds as though Jane thinks it is coming from her stomach. She may fear that she has an ulcer. She also mentions urinary frequency, which may well be associated with IBS but could be a urinary infection. A referral to her doctor is sensible to make a complete assessment of her symptoms. It is likely that the assessment would just involve listening to her description of her problem, gathering more information and a brief examination of her abdomen. A urine sample would help to see if there is a urinary infection. If there was still doubt about the diagnosis, a referral to a gastroenterologist at the local hospital could be made. Between 20% and 50% of referrals to gastroenterologists turn out to be due to IBS. The main purpose of referral is to exclude other causes of bowel symptoms and for reassurance.

If the doctor thinks Jane has IBS, an explanation of the syndrome would be helpful in addition to dealing with her concerns about a stomach ulcer. Whether or not psychological factors cause IBS, there is no doubt that the stresses of life can aggravate symptoms. It therefore makes sense to help sufferers to make this connection so that they can consider different ways of dealing with stress.

Often the above approach is an effective treatment in itself. However, if Jane did want some medication, a bulking agent, such as *ispaghula husk*, to help her constipation plus some antispasmodic tablets may be of value.

A number of drugs may be prescribed by the GP surgery and it is worth the pharmacist understanding how these are being used, particularly if the patient is considering purchasing other treatment:

- *Amitriptyline* at low dose (usually 10–30 mg at night), an unlicensed indication, can be used for abdominal pain or discomfort as a second-line option in patients who have not responded to antispasmodics, antimotility drugs or laxatives. A relative contraindication to *amitriptyline* is chronic constipation, which may limit its use in some patients. Concomitant treatment with *hyoscine* is best avoided because of enhanced antimuscarinic/anticholinergic activity.
- A SSRI, such as *citalopram* or *fluoxetine*, may be considered in those who do not respond to a tricyclic antidepressant (again, an unlicensed use).
- *Linaclotide* is a drug specifically indicated for moderate-to-severe IBS with constipation. It acts as a laxative and works by stimulating enzymes in the gut to increase intestinal secretion. NICE advise that patients who have not responded to laxatives from the different classes and who have had constipation for at least 12 months can be treated with *linaclotide*. The main side effects are abdominal distention, abdominal pain, diarrhoea, dizziness and flatulence.

HAEMORRHOIDS

Haemorrhoids (commonly known as piles) can produce symptoms of itching, burning, pain, swelling and discomfort in the perianal area and anal canal and rectal bleeding. They are swollen vascular cushions, which protrude into the anal canal (internal piles) and may swell so much that they hang down outside the anus (external piles). See Figure 3.4. They are often caused or exacerbated by inadequate dietary fibre or fluid intake. Careful questioning is essential to differentiate between this minor condition and others that may be potentially more serious. It is an embarrassing subject and consultations require privacy.

What you need to know

- Duration and previous history
- Symptoms
  - Itching, burning
  - Soreness
  - Swelling
  - Pain
  - Blood in stools
  - Constipation
  - Bowel habit
  - Pregnancy
- Other symptoms
  - Abdominal pain/vomiting
  - Weight loss
  - Medication

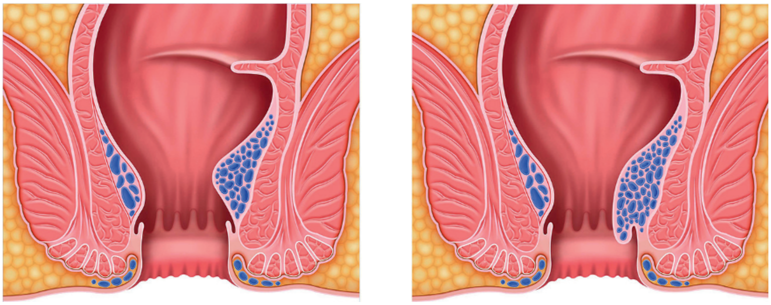
SIGNIFICANCE OF QUESTIONS AND ANSWERS

Duration and previous history

As an arbitrary guide, the pharmacist might consider treating haemorrhoids of up to 3 weeks' duration. Establishing whether the patient has a previous history of haemorrhoids and if they saw the doctor about the problem is useful. A recent examination by the doctor that has excluded serious symptoms would indicate that treatment of symptoms by the pharmacist would be appropriate.

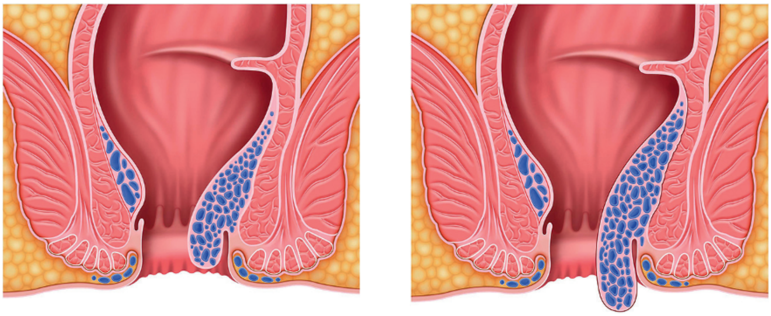
Symptoms

The term haemorrhoids includes internal and external piles, which can be further classified by grade (or ‘degree’) as (i) those that are confined to the anal canal and cannot be seen, (ii) those that prolapse through the anal sphincter on defaecation and then reduce by themselves or (iii) are pushed back through the sphincter after defaecation by the patient and (iv) those that remain persistently prolapsed and outside the anal canal. See Figure 3.4 which illustrates this classification. Predisposing factors for haemorrhoids include diet, sedentary occupation and pregnancy, and there is thought to be a genetic element as predisposition to haemorrhoids can run in families.



Degrees I

Degrees II



Degrees III

Degrees IV

FIGURE 3.4 Different degrees of haemorrhoids. *Source:* ilusmedical/Shutterstock.

Pain

Pain is not always present; if it is, it may take the form of a dull ache and may be worse when the patient is having a bowel movement. Severe pain suggests other associated causes.

A severe sharp pain on defaecation may indicate the presence of an associated anal fissure, which may be accompanied by a sentinel pile (a small skin tag at the posterior margin of the anus) and requires referral. A fissure is a minute tear in the skin of the anal canal. It is usually caused by constipation and can often be managed conservatively by correcting this and using a local anaesthetic-containing cream or gel. Sometimes, a vasodilatation ointment is prescribed, such as *GTN rectal ointment*, or a topical calcium channel blocker, such as *diltiazem cream*, which causes anal muscle relaxation. In severe cases, a minor operation is sometimes necessary.

One complication of external haemorrhoids is that they can 'strangulate' (the blood supply to the haemorrhoid can be cut off). This can be intensely painful. Another possible complication is a blood clot (thrombosis) that can form within the vascular anal cushion, and this also causes intense pain if it occurs. This is termed a thrombosed pile or perianal thrombosis; the pain of this usually peaks after 48–72 h and then gradually goes away over 7–10 days. Sometimes, they are incised by the doctor to relieve pain.

Irritation

The most troublesome symptom for many patients is itching and irritation of the perianal area rather than pain. Persistent or recurrent irritation, which does not improve, is sometimes associated with rectal cancer and should be referred.

Bleeding

Blood may be deposited onto the stool from haemorrhoids as the stool passes through the anal canal. This fresh blood will appear bright red. It is typically described as being splashed around the toilet pan and may be seen on the surface of the stool or on the toilet paper. If blood is mixed with the stool, it will probably have come from higher up the GI tract and may be dark in colour (altered blood). If this or 'new' rectal bleeding is described, the pharmacist should suggest that the patient see the doctor so that an examination can be performed to exclude more serious pathology, such as tumour or polyps.

Colorectal cancer can cause rectal bleeding. The disease is unusual in patients under the age of 50 years, and the pharmacist should be alert for the older patients with rectal bleeding. This is particularly so if there has been a significant and sustained alteration in bowel habit.

In patients with recurrent bleeding from piles, the blood loss can mount up, and occasionally it can be the cause of iron deficiency anaemia.

Constipation

Constipation is a common cause of haemorrhoids, and also commonly exacerbates the problem. Straining at stool will occur; this increases the pressure in the highly vascular tissue cushions in the anal canal, and haemorrhoids and bleeding may result. If piles are painful, the patient may try to avoid defaecation, but ignoring the call to open the bowels will make the constipation worse.

Insufficient dietary fibre and inadequate fluid intake may be involved, and the pharmacist should also consider the possibility of drug-induced constipation (see the Constipation section earlier in this chapter).

Bowel habit

A persisting change in bowel habit is an indication for referral, as it may be caused by a bowel cancer. Seepage of faecal material through the anal sphincter (one form of faecal incontinence) causes soiling of underwear and can produce irritation and itching of the perianal area and may be caused by the presence of a tumour.

Pregnancy

Pregnant women have a higher incidence of haemorrhoids than non-pregnant women. This is thought to be due to pressure on the vascular anal cushions due to the gravid uterus. Constipation in pregnancy is also a common problem because raised progesterone levels mean that the gut muscles tend to be more relaxed. Such constipation can exacerbate symptoms of haemorrhoids. Appropriate dietary advice can be offered by the pharmacist (see Chapter 6: Women's Health: Common symptoms in pregnancy).

Other symptoms

Symptoms of haemorrhoids remain local to the anus. They do not cause abdominal pain, abdominal distension or vomiting. Any of these more widespread symptoms suggest other problems and require referral.

Tenesmus (the desire to defaecate when there is no stool present in the rectum) sometimes occurs when there is a tumour in the anus or rectum. The patient may describe a feeling of often wanting to pass a motion but no faeces being present. This symptom requires urgent referral.

Medication

Patients may already have tried one or more proprietary preparations to treat their symptoms. Some of these products are advertised widely, and as haemorrhoids are potentially embarrassing, patients often ask for the product rather than describe their symptoms. It is therefore important to identify the exact nature of the symptoms being experienced and details of any products used already. If the patient is constipated, the use of any laxatives should be established.

Present medication

Haemorrhoids may be exacerbated by drug-induced constipation, and the patient should be carefully questioned about current medication, including prescription and OTC medicines. A list of drugs that may cause constipation can be found earlier in this chapter in the section on Constipation. Rectal bleeding in a patient taking *warfarin* or another anticoagulant is an indication for urgent referral.

When to refer

Duration of longer than 3 weeks
Presence of blood in the stools
Significant pain
Change in bowel habit (persisting alteration from normal bowel habit)
Suspected drug-induced constipation
Associated abdominal pain/vomiting
Malaise, fever or weight loss

Treatment timescale

If symptoms have not improved after 1 week, patients should see their doctor.

MANAGEMENT

Symptomatic treatment of haemorrhoids can provide relief from discomfort, but, if present, the underlying cause of constipation must also be addressed. The pharmacist is in a good position to offer dietary advice, in addition to treatment, to prevent the recurrence of symptoms in the future. GPs in England are advised not to routinely prescribe medication for haemorrhoids and to encourage patients to buy treatments, under the NHS OTC policy.

In severe or persistent cases, there may be a need for surgical intervention, following assessment at the GP surgery. Options include rubber band ligation, sclerotherapy injections and haemorrhoidectomy.

Local anaesthetics, such as benzocaine and lidocaine (lignocaine)

Local anaesthetics can help to reduce the pain and itching associated with haemorrhoids. There is a possibility that local anaesthetics may cause sensitisation, and their use is best limited to a maximum of 2 weeks.

Skin protectors

Many antihaemorrhoidal products are bland soothing preparations containing skin protectors (e.g. *zinc oxide* and *kaolin*). *White petroleum jelly* can be used for the same purpose. These products have emollient and protective properties. Protection of the perianal skin is important, because the presence of faecal matter can cause or aggravate symptoms, such as irritation and itching. Protecting agents form a barrier on the skin surface, helping to prevent irritation and loss of moisture from the skin. Aloe vera has been traditionally used for many years to support the healing of wounds/burns and is used in gel form to treat haemorrhoids.

Topical steroids

Ointment and suppositories containing *hydrocortisone* with skin protectors are available. The steroid reduces inflammation and swelling to give relief from itching and pain. The treatment should be used each morning and at night and after a bowel movement. The use of such products is restricted to those over 18 years of age. Treatment should not be used continuously for longer than 7 days.

Astringents

Astringents, such as *zinc oxide*, hamamelis (witch hazel) and *bismuth salts* are included in products for piles on the theoretical basis that they will cause precipitation of proteins when applied to mucous membranes or skin that is broken or damaged. A protective layer is then thought to be formed, helping to relieve irritation and inflammation. Some astringents also have a protective and mild antiseptic action (e.g. *bismuth*).

Shark liver oil/live yeast

These agents are said to promote healing and tissue repair, but there is no supporting scientific evidence.

Laxatives

The short-term use of a laxative to relieve constipation is advisable. Bulk laxatives make stools softer and easier to pass. A stimulant laxative (e.g. *senna*) could be supplied for 1 or 2 days to help deal with the immediate problem, while dietary fibre and fluids are being increased. For patients who cannot or choose not to adapt their diet, bulk laxatives, such as *ispaghula husk*, may be used in the long term.

PRACTICAL POINTS

Self-diagnosis

Patients may say that they have piles, or think they have piles, but careful questioning by the pharmacist is needed to check whether this self-diagnosis is correct. If there is any doubt, referral is the best course of action.

Hygiene

The itching of haemorrhoids can often be improved by good anal hygiene, since the presence of small amounts of faecal matter can cause itching. The perianal area should be washed with warm water as frequently as practicable, ideally after each bowel movement. Soap will tend to dry the skin and could make itching worse, but a mild or ‘simple’ soap could be tried if the patient wishes to do so. Moist toilet tissues and toilet tissue sprays are available, and these can be useful where washing is not practical and some patients prefer them. These tissues are better used with a patting rather than a rubbing motion, which might aggravate symptoms. Many people with haemorrhoids find that a warm bath soothes their discomfort.

An increased intake of dietary fibre will increase bowel frequency, so patients should be advised to take care in wiping the perianal area and to use soft toilet paper to avoid soreness after wiping.

How to use OTC products

Ointments and creams can be used for internal and external haemorrhoids and should be applied in the morning, at night and after each bowel movement. An applicator is included in some packs of ointments and creams, and patients should be advised to take care in use to avoid any further damage to the perianal skin.

Suppositories can be recommended for internal haemorrhoids. After removing the foil or plastic packaging (patients have been known to try and insert them with the packaging left on), a suppository should be inserted in the morning, at night and after bowel movements. Insertion is easier if the patient is crouching or lying down.

HAEMORRHOIDS IN PRACTICE

Case 1

Kieran Shah, a local postman whom you know quite well, asks if you can recommend something for his usual problem (he suffers from piles occasionally; you have dispensed prescriptions for *Anusol HC* and similar products in the past and have previously advised him about dietary fibre and fluid intake). You invite him into the consultation room; he tells you that he has been away on holiday for 2 weeks and has not been eating the same foods he does when at home. His symptoms are itching and irritation of the perianal area, but no pain, and he has a small swelling, which hangs down from the anus after he has passed a motion, but which he is able to push back in again. He is a little constipated, but he is not taking any medicines.

The pharmacist's view

This patient's previous haemorrhoids have been diagnosed and treated by his doctor. It is likely that his holiday and temporary change in diet have caused a recurrence, so he now has a second-degree pile, and it would be reasonable to suggest symptomatic treatment for a few days. You could recommend the use of an ointment preparation containing *hydrocortisone* and skin protectors for up to 1 week and remind Mr Shah that the area should be kept clean and dry. You might consider recommending a laxative to ease the constipation until Mr Shah's diet gets back to normal (you advise that he return to his usual high-fibre diet) and makes sure his daily fluid intake is sufficient; a small supply of the stimulant/stool softener *docusate sodium* would be reasonable. He should see his doctor after 1 week if the problem has not cleared up.

The doctor's view

The treatment suggested by the pharmacist should settle Mr Shah symptoms within 1 week. The treatment is symptomatic. Keeping his motions loose and avoiding constipation in the long term should keep his problem at bay. If he continues to suffer from frequent problems, referral should be considered. His doctor could advise whether or not to refer him to hospital for injection, rubber band ligation or removal of the piles (some GPs will do rubber band ligation and injections in the surgery).

Case 2

Mr Briggs is a local shopkeeper in his late 50s who wants you to recommend something for his piles. He tells you that he has had them for quite a while – a couple of months. He has tried several different ointments and suppositories, all to no avail. The main problem now is bleeding, which has become worse. In fact he tells you, feeling somewhat embarrassed, that he has been buying sanitary towels because this is the only way he can prevent his clothes from becoming stained. He is not constipated and has no pain.

The pharmacist's view

Mr Briggs should be referred to his doctor straight away because of the symptom duration of 2 months, and there must be quite profuse rectal bleeding, which may well be due to a more serious disease. Anaemia should also be considered. He has already tried some OTC treatments, with no success. His age and the description of his symptoms mean that further investigation is needed.

The doctor's view

Mr Briggs does need to be seen by his doctor. This is not a typical presentation of piles. He will need a more detailed assessment to look for a cancer of the colon or rectum. Piles can bleed at times other than when defaecating, but this is uncommon. The doctor would gather more information by questioning and from an examination. The examination would usually include a digital rectal assessment to assess whether or not an anal or rectal tumour is present. A blood test will be needed to determine if he has become anaemic and possibly look for other pathology. It is quite likely that this man would require urgent outpatient hospital referral for further investigations, which would involve sigmoidoscopy and possibly more extensive colonoscopy.

Case 3

Caroline Andrews is a young woman in her mid-20s, who works as a graphic designer in a local marketing agency. She asks your advice about an embarrassing problem that she is finding it very painful to pass motions. On questioning, she tells you that she has had the problem for a few days and has been constipated for about 2 weeks. She eats a diet that sounds relatively low in fibre and has been eating less than usual because she has been very busy at work. Caroline says she seldom takes any exercise. She takes the contraceptive pill, but is not taking any medicines and has no other symptoms, such as rectal bleeding.

The pharmacist's view

Caroline would probably be best advised to see her doctor, since the symptoms and pain that she has described might be due to an anal fissure, though they may be caused by a thrombosed pile.

The doctor's view

An anal fissure would be the most likely cause of Caroline's problem. Sometimes, a thrombosed pile or a blood clot in the perianal area (called perianal haematoma) can cause similar symptoms. An examination by her doctor should quickly confirm which of these is the cause. Correction of the constipation and future preventative dietary advice may well solve the problem. The discomfort could be helped by a local anaesthetic-containing cream or gel. If this is applied prior to a bowel action, the discomfort would be less. Thrombosed piles or perianal haematomata usually heals up after a few days, but sometimes incision to remove the clot is indicated. In severe cases of anal fissure that are not settling, referral to a specialist surgeon is necessary in order to release one of the muscles in spasm for rapid relief from pain. Topical *GTN ointment* is licensed to treat anal fissure. Topical preparations of *diltiazem* or *nifedipine* are unlicensed, but are sometimes used for this purpose. In addition, oral *diltiazem* or *nifedipine* is used by specialists for anal fissure, but there are fewer side effects with topical therapy.

Note: The Cochrane review resources do not have a date as these are often updated. The most up-to-date version should be consulted. NICE Guidelines and Clinical Knowledge Summaries (CKS) Guidance are also updated from time to time.

Chapter and section	**CKS (`https://cks.nice.org.uk`)**	**NHS Health A–Z and Medicines A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Mouth ulcers	☑ Aphthous ulcers	☑		• BMJ Best Practice: Oral aphthous ulcers
Heartburn	☑ Dyspepsia – GORD	☑ Heartburn and gastro-oesophageal reflux disease	• Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management, CG184	• NICE Pathways: Dyspepsia and gastro-oesophageal reflux disease • BMJ Best Practice: Gastro-oesophageal reflux disease
Indigestion	☑ Dyspepsia	☑	• Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management, CG184 • Suspected cancer: recognition and referral, NG12 • Acute upper gastrointestinal bleeding in over 16s: management, CG141	• NICE Pathways: Dyspepsia and gastro-oesophageal reflux disease • BMJ Best Practice: Assessment of Dyspepsia

Nausea and vomiting		☑		• BMJ Best Practice: Assessment of nausea and vomiting (Adults) • Tidy, C. (2015). Patient professional reference: infantile hypertrophic pyloric stenosis, `https://patient.info/doctor/infantile-hypertrophic-pyloric-stenosis` (Accessed 30 August 2021)
Motion sickness and its prevention	☑ Vertigo	☑		
Constipation	☑ ☑ GI tract (lower) cancers – recognition and referral	☑ ☑ Bowel cancer screening	• Suspected cancer: recognition and referral, NG12 • Constipation in children and young people: diagnosis and management, CG99	• BMJ Best Practice: Laxatives Treatment Algorithm
Diarrhoea	☑ Gastroenteritis ☑ Diarrhoea – prevention and advice for travellers	☑		• BMJ Best Practice: Viral gastroenteritis in children • Cochrane review: probiotics for treating acute infectious diarrhoea

(*Continued*)

Chapter and section	**CKS (`https://cks.nice.org.uk`)**	**NHS Health A–Z and Medicines A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Irritable bowel syndrome	☑	☑	• Irritable bowel syndrome in adults: diagnosis and management, CG61	• Cochrane review: bulking agents, antispasmodics and antidepressants for the treatment of irritable bowel syndrome • Cochrane review: Biofeedback for the treatment of IBS • Cochrane review: Homoeopathy for the treatment of IBS
Haemorrhoids	☑	☑		

CHAPTER 4

Skin Conditions

ECZEMA/DERMATITIS

Eczema and dermatitis are terms often used interchangeably. Dermatitis is more commonly used when an external precipitating factor is present (contact dermatitis). The rashes produced have similar features, but the distribution on the body varies and can be diagnostic. Atopic eczema is a chronic, relapsing, itchy skin condition affecting up to 20% of children, and often greatly improving with age such that 2–10% of adults are affected. Atopy is the term used to describe a group of three conditions – eczema, asthma and hay fever – which commonly coexist in an affected individual and which run in families.

The rash of eczema typically presents as dry flaky skin that may be inflamed and have small red spots (Figure 4.1). The skin may be cracked and weepy and sometimes becomes thick. The rash is irritating and can be extremely itchy. If it is not itchy, it is unlikely to be eczema. Many cases of mild-to-moderate eczema can be managed by the patient with support from the pharmacist. There are two types of contact dermatitis, namely irritant and allergic. Irritant dermatitis is non-allergic and involves direct damage to the skin, whereas allergic dermatitis involves an immune response to the causative substance.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

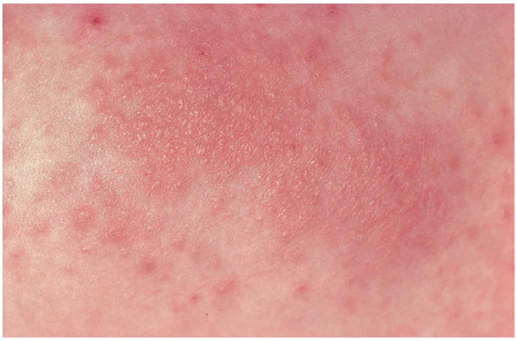

FIGURE 4.1 Typical eczema dermatitis rash. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

What you need to know

Age
Distribution of rash
Itching
Occupation/contact
Previous history
History of hay fever/asthma
Aggravating factors
Medication
Effect on quality of life

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age/distribution

The distribution of the rash of atopic eczema tends to vary with age. During infancy, atopic eczema primarily involves the face, the scalp and the extensor surfaces of the limbs (Figure 4.2). The nappy area is usually spared.

In White older children, the rash is most marked in the flexures: behind the knees, on the inside of the elbow joints and around the wrists, as well as the hands, ankles, neck and around the eyes. In Black and Asian children, the rash is often on the extensor surface of the joints and may have a more follicular or 'rougher' appearance.

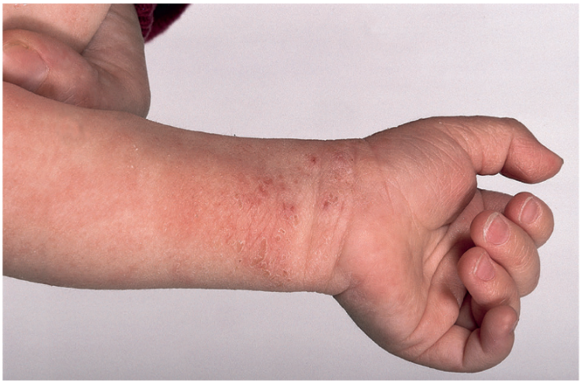

FIGURE 4.2 Typical atopic eczema on flexor surface of forearm of child.

In adults, the neck, the backs of the hands, the flexures of the elbows and knees and ankles and the feet are the most common sites for atopic eczema. This is often associated with generalised dryness and itching. People who have had childhood eczema often have dry skin for the rest of their life.

The symptoms can overlap with contact dermatitis, as people with eczema are more prone to allergies.

Contact dermatitis most commonly is of the irritant type and affects the hands. It can occur at other sites depending on what triggers the skin reaction such that people with contact sensitivity to nickel may get a rash where their jewellery, spectacle frames or bra strap fastening touches the skin.

These rashes are different from the rash of intertrigo that is caused by sweating and skin friction, and often aggravated by a fungal infection, and is found in skinfolds or occluded areas, such as under the breasts in women and in the groin or armpits.

Itching

The condition is unlikely to be eczema/dermatitis if there is no itch. The skin is usually visibly irritated and the patient will often describe intense itching, which can disturb sleep. Babies or children will rub or scratch at the affected area. Long-standing or chronic eczema is characterised by thickened (lichenified) skin resulting from repeated scratching due to the itch.

Occupation/contact

Irritant contact dermatitis is most commonly caused by prolonged exposure to water (wet work) alongside soaps or detergents, which remove the natural fatty protective barrier from the skin. Typical occupations include cleaning, hairdressing, food processing, fishing and metal engineering. Other substances that can irritate the skin include alkaline cleansing agents, degreasing agents, solvents and oils. They either cause direct and rapid damage to the skin or, in the case of weaker irritants, exert their irritant effect after continued exposure. Nappy rash (napkin dermatitis) is an irritant dermatitis and can be complicated by infection, for example, thrush.

Allergic contact dermatitis is caused by an allergic response to substances that include chromates (present in cement and rust-preventive paint), nickel (present in buckles, fastenings and costume jewellery and as plating on scissors), rubber and resins (two-part glues and the resin colophony in adhesive plasters), dyes, certain plants (e.g. *Primula*), oxidising and reducing agents (as used by hairdressers when perming hair) and medications (including topical corticosteroids, *lanolin*, *neomycin* and *cetyl stearyl alcohol*). Eye make-up and hair dyes can also cause allergic contact dermatitis.

Clues as to whether or not a contact problem is present can be gleaned from knowledge of site of rash, details of job and hobbies, onset of rash and agents handled and improvement of rash when away from work or on holiday. Weaker allergens may require multiple exposures over several years to trigger an allergy.

Previous history

Patients may ask the pharmacist to recommend treatment for eczema that has been previously diagnosed by the doctor. In cases of mild-to-moderate eczema, you can recommend the use of emollients and advise on skincare. Mild or moderate strength corticosteroids, such as *topical hydrocortisone* and *clobetasone* preparations, can also be recommended and supplied. However, where severe or infected exacerbations of eczema are involved, the patient needs to be referred to the surgery.

Pharmacists are sometimes asked for over-the-counter (OTC) *topical hydrocortisone* or *clobetasone* by patients on the recommendation of their doctor or nurse. It can be difficult to explain to a patient why such a sale cannot legally be made if the product is for use on the face or anogenital area or for severe eczema. You can minimise such problems by ensuring that local family doctors (especially those in training) are aware of the restrictions that apply to the sale of *hydrocortisone* and *clobetasone* OTC.

History of hay fever/asthma

Many atopic eczema sufferers have associated hay fever and/or asthma. Most adults will have developed their first symptoms of eczema in the first 1–2 years of life (this is regarded as a diagnostic feature). There is often a family history (in about 80% of cases) of eczema, hay fever or asthma. You can ask about this.

Aggravating factors

Atopic eczema may be worse during the hay fever season and aggravated by house dust or animal dander. Emotional factors, stress and worry can sometimes exacerbate eczema. Hormonal changes in women are recognised aggravating factors or triggers. Among women who have atopic eczema, premenstrual flares occur in 30%, and pregnancy can adversely affect eczema in up to 50%. Factors that dry the skin, such as soaps or detergents and cold wind, can aggravate the condition. Certain clothing, such as woollen material, can irritate the skin. In a small minority of sufferers (<5%), cow's milk, eggs and food colouring (tartrazine) have been implicated. Antiseptic and antibacterial solutions applied directly to the skin or added to the bathwater can irritate the skin. Hand sanitiser gels in frequent use because of coronavirus disease (COVID-19) may also be an aggravating factor.

Medication

Both atopic eczema and contact dermatitis may be caused or made worse by sensitisation to topical medicaments, so you should ask which treatments have already been used. Topically applied local anaesthetics, antihistamines, antibiotics and antiseptics can all aggravate eczema or provoke contact dermatitis. Some preservatives may cause sensitisation. *Lanolin* or its derivatives sometimes cause sensitisation, although newer hypoallergenic formulations of *lanolin* are less problematic. Information about different preparations and their formulations can be obtained from the Summary of Product Characteristics or from the manufacturer of the product. The *British National Formulary* (*BNF*) is also a good source of information on this subject, with a list of additives for each topical product and excipients that may be associated with sensitisation.

If the patient has used a preparation that the pharmacist considers appropriate for the condition correctly but there has been no improvement or the condition has got worse, the patient should see the doctor.

Effect on quality of life

In addition to physical symptoms, eczema and its exacerbations can have a profound effect on a patient's quality of life. People living with eczema are at a higher risk of experiencing depression, anxiety and stress. Self-consciousness about the appearance of visibly affected skin, stares and comments impact on self-confidence. Sleep disturbed by itching also has a negative effect on the well-being.

When to refer

Evidence of infection (weeping, crusting, spreading)
Severe condition: badly fissured/cracked skin, bleeding
Failed medication
No identifiable cause (unless previously diagnosed as eczema)
No improvement after 1 week with topical corticosteroids

Treatment timescale

Most cases of mild-to-moderate atopic eczema, irritant and allergic dermatitis should respond to skincare and treatment with OTC products. If no improvement has been noted after 1 week, referral to the general practitioner (GP) surgery is advisable.

MANAGEMENT

Skin rashes tend, quite understandably, to cause anxiety. There is also a social stigma associated with skin disease. Many patients will have seen their doctor, and pharmacists are most likely to be involved when the diagnosis has already been made, or when the condition first presents but is very mild.

However, it is now recognised that many patients can self-treat mild-to-moderate eczema. As much of the management involves advice and, crucially, the regular and continued use of emollients, the pharmacist is in a good position to help, with short-term use of OTC topical corticosteroids where needed. Where the pharmacist is able to identify a cause of irritant or allergic dermatitis, alongside removing or avoiding the cause, an OTC topical corticosteroid may be recommended.

Emollients

Emollients are the key to managing eczema and are medically inert creams and ointments that can be used to soothe the skin, reduce irritation, prevent the skin from drying, act as a protective layer and be used as a soap substitute.

Most contain no active ingredients. There are many different types of emollient preparations, including ointments, creams, gels, lotions and sprays, and they vary in their degree of greasiness. The greasiest preparations, such as white soft paraffin, are very effective, especially with very dry skin, but are messy and less pleasant to use than less greasy preparations. Patient preference is crucial and plays a major part in effective use of emollients. Patients will understandably not use a preparation they find unacceptable and may need to try several different emollients before they find one that suits them. They may need to have more than one product (e.g. for use as a moisturiser and for use as a soap substitute when washing or showering).

Emollient preparations contained in tubs should be removed with a clean spoon or spatula to reduce bacterial contamination of the contents from the fingers. For lotions, creams and gels, products with a pump dispenser reduce the risk of bacterial contamination. These preparations should be used as often as needed to keep the skin hydrated and moist and this may require several and frequent applications each day.

Emollients containing active ingredients are not generally recommended because they increase the risk of skin reactions, but may have value in some people. Active ingredients include *urea*, which acts as a keratin softener and hydrating agent, and *lauromacrogols*, which have local anaesthetic properties and are also said to soothe and relieve itch.

Some patients with eczema believe, incorrectly, that bathing will make their eczema worse. This is not the case, provided appropriate emollient products are used and standard soaps and perfumed bath products are avoided; bathing to remove skin debris and crusts may in fact be beneficial.

Standard soaps, shampoos and shower gels have a drying effect on the skin and can make eczema worse. Emollients can be used instead of soap; either cream applied directly, or ointments dissolved in hot water make suitable soap substitutes. Bath additives are an option for people with extensive areas of dry skin, but evidence to support their use is limited. Sodium lauryl sulfate (SLS) used to be a common ingredient of emollients, but it can irritate the skin and make eczema worse. Aqueous cream is now considered less suitable for use as it contains SLS.

Emulsifying ointment is often used as a bath additive and should first be mixed with water (one or two tablespoonfuls of ointment in a bowl of hot water) before being added to the bath to ensure distribution in the bathwater. Patients, parents or carers should be warned to take care because the bath will be slippery!

Case reports have recently highlighted that many emollient products may cause a fire risk. The Medicines and Healthcare products Regulatory Agency (MHRA) have issued guidance over this concern. They say that healthcare professionals must ensure that patients and their carers understand the fire risk associated with the build-up of residue on clothing and bedding and can take action to minimise the risk. There is a fire risk with all paraffin-containing emollients and it cannot be excluded with paraffin-free emollients. The MHRA say that patients applying or using emollients should not smoke or go near naked flames because clothing, bedding, dressings, and other fabrics that have been in contact with an emollient or emollient-treated skin can rapidly ignite. Washing these materials at high temperature may reduce emollient build-up but may not totally remove it. In 2020 the MHRA released a toolkit of resources for health and social care professionals to support the safe use of emollients, available at: `www.gov.uk/drug-safety-update/emollients-and-risk-of-severe-and-fatal-burns-new-resources-available` (accessed 18 February 2022).

ADVICE

This could include the identification of possible aggravating or precipitating factors. If the history is suggestive of an occupationally associated contact dermatitis, then referral is advisable. The doctor may in turn feel that referral to a dermatologist is appropriate. It is sometimes necessary for a specialist to perform patch testing to identify the cause of contact dermatitis.

Further advice could be given regarding the use of ordinary soaps and detergents that tend to dry the skin and their alternatives (soap substitutes). If corticosteroid creams have been prescribed and emollients are to be used, the pharmacist is in a good position to check that the patient understands the way in which they should be used and to ensure adequate quantities are available. For many people, in order to stop eczema flaring up or returning, emollients should be thought of as indefinite treatment.

Topical corticosteroids

Hydrocortisone cream and ointment and *clobetasone* 0.05% can be sold OTC for a limited range of indications. Their steroid potency is classed as mild (*hydrocortisone*) or moderate (*clobetasone*). *Topical hydrocortisone* OTC is licensed for the treatment of irritant and allergic dermatitis, insect bites and mild-to-moderate eczema. OTC *hydrocortisone* is contraindicated where the skin is infected (e.g. athlete's foot or cold sores), in acne and on the face and anogenital areas. Children aged over 10 years and adults can be treated, and any course must not be longer than 1 week. Only OTC products of *topical hydrocortisone* can be used; dispensing packs may not be sold.

Topical clobetasone 0.05% can be sold OTC for the short-term treatment and control of patches of eczema and dermatitis in people aged 12 years and over (used for <7 days). The indications include atopic eczema and primary irritant or allergic dermatitis and exclude seborrhoeic dermatitis.

OTC topical corticosteroids should not be used on the groin, breast fold, genitals, or between the toes because these are common sites of fungal infections; nor on the face, as they can cause perioral dermatitis and acneiform pustules (see Figure 4.3).

All should be used sparingly and explaining to patients the use of fingertip units is helpful. A fingertip unit is the amount of cream you can squeeze on to your fingertip from the tip to the first crease. Half a fingertip unit will cover a patch of skin the same size as the palm of the hand.

Antipruritics

Antipruritic preparations are sometimes helpful, although evidence of effectiveness is lacking. There is some evidence to support *ceramide*-containing emollients (*ceramides* are naturally occurring lipid molecules in the stratum corneum that may help to prevent loss of skin moisture). *Lauromacrogols* are reputed to relieve itch.

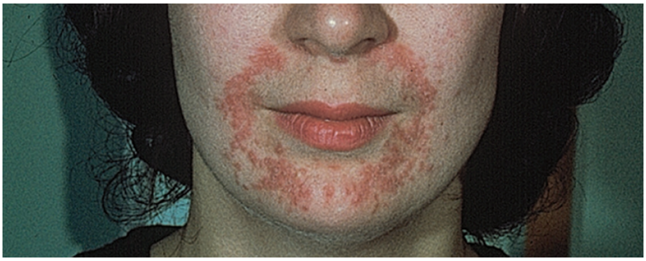

FIGURE 4.3 A perioral dermatitis following withdrawal of the potent topical steroid that had been wrongly used to treat seborrhoeic eczema. *Source:* Weller *et al.* (2014). Reproduced with permission of John Wiley & Sons.

Urea may improve skin hydration. It can enhance the moisture-retaining ability of emollients, thereby improving their efficacy. Topical antihistamines should not be used, as these can cause sensitisation that will aggravate eczema.

Calamine or *crotamiton* can be used in cream or lotion. A combination product containing *crotamiton* with *hydrocortisone* is available. Indications for use are the same as those for *topical hydrocortisone* for contact dermatitis (irritant or allergic), insect bites or stings and mild-to-moderate eczema. The same restrictions apply on use (see the heading 'Topical corticosteroids' in the earlier text).

Complementary therapies

Homeopathic remedies, herbal medicine, massage and food supplements (such as evening-primrose oil) have insufficient evidence to support their use in eczema. Chinese herbal medicines, sometimes used because they are viewed as more 'natural', have been associated with adverse effects and in some cases have been found to contain potent corticosteroids. Some herbal creams have been found to contain harmful bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA).

PRACTICAL POINTS

1. Support for patients
   The National Eczema Society provides information and support through its website (`www.eczema.org`), a telephone helpline and written information. The British Association of Dermatologists (BAD) produces useful patient information leaflets on eczema, contact dermatitis and other skin conditions (`www.bad.org.uk/leaflets`).
2. Diet and eczema
   Patients should not alter their diet unless under specialist advice.

ECZEMA AND DERMATITIS IN PRACTICE

Patient perspectives

I have lived with eczema all my life. I am now 33. My father had eczema and asthma. And the youngest of my three children also suffers from eczema. I know the heartache of this disease well. I have learned to control my eczema throughout my lifetime, but it takes quite a lot of trial and error to find the things that work and to avoid the things that set it off. Parents of kids with eczema need to listen to them and be patient with them because eczema can be miserable for a child.

By the time I was about 18 or 19, my eczema had practically gone. My skin is still very sensitive and quite dry, but is mostly fine. I go through phases where eczema breaks out behind my knees, on my forearms, on the back of my neck and on my lower back. When this happens, extra moisturiser and an OTC steroid bring it under control again.

Managing atopic dermatitis is like taking care of the family car. When the car breaks down, you take it to the mechanic and get it fixed. That is like managing a flare-up of eczema with topical steroids, but the maintenance is still needed. Your car may be mended, but you still have to put oil in it regularly or the engine will seize up – so regular emollients or 'moisturisers' are required. And, like your car, you can do everything right – change the oil when you're supposed to – and it can still break down on you.

Case 1

Samixa Shah asks your advice about her 4-year-old daughter Aisha whose eczema has worsened recently. She tells you that she has been using Chinese herbs, which have proved very helpful until the last week or so. The eczema has flared up especially on her arms and legs. She would like to use a safe cream, but not a steroid cream, as she has heard about its side effects. Aisha is not with her mother.

The pharmacist's view

Chinese herbal treatments are popular for eczema. Their exact contents and the amounts of their constituent active ingredients are difficult to identify. Analysis of some of these herbal treatments has shown them to contain active ingredients with corticosteroid effects. Aisha should be seen at the GP surgery as the eczema has flared up, and without seeing the child it is difficult to assess severity. However, the mother's comments and the history indicate that medical assessment would be helpful.

The doctor's view

The flare-up of her eczema could be due to an infection. The dry flaky skin can be an ideal site for infections to thrive. If that happens, the eczema is further worsened. It would be advisable for Aisha to be referred to her GP surgery. Some practices have access to nurses who specialise in skin conditions, such as eczema. The GP or nurse might take a skin swab to determine the cause of infection and start oral antibiotics with a corticosteroid cream. In this case, it would be necessary to check out Mrs Shah's concerns about corticosteroid creams. With appropriate information, she may well be persuaded to try one. Usually they are only used for short bursts of a week or two alongside long-term emollient use and avoidance of soaps and bubble baths. Used in this way, they are very safe. Advise her that Chinese herbs may not be subject to quality control and regulation, may contain potent corticosteroids and have been associated with liver toxicity.

Case 2

Ray Timpson is a local man in his mid-30s and a regular customer. Today, he wants to buy some *clobetasone* cream for his eczema, which has got worse. He has had eczema for many years and usually obtains his cream on a repeat prescription from his doctor. Since childhood, Mr Timpson has asthma, and both asthma and hay fever are present in some members of his family. He has just seen an advert for *clobetasone* and says he would prefer to buy his supplies from you in the future to save both himself and the doctor some time. The eczema affects his ankles, shins and hands; the skin on his hands is cracked and weeping.

The pharmacist's view

Mr Timpson needs to see his doctor because the eczema on his hands is infected. Topical steroids, including *clobetasone*, should not be used on infected skin unless the infection is being treated.

The doctor's view

The description given suggests widespread atopic eczema with an area of infection on his hands. Although he has had this problem for many years, it would make sense for him to be referred back to the GP surgery, especially in view of the likely infection. It would be helpful for the doctor to gain an understanding of Mr Timpson's ideas, concerns and expectations about his eczema and its management. It would be useful to identify any aggravating factors, for example, pets, soaps, washing powders, working environment and stress. It would be helpful to enquire which emollients have been used and how helpful they have been. Has he continued with their use? It may be useful to take a swab to establish the cause of infection, which is most likely due to *Staphylococcus aureus*. In this situation, a 10-day course of *flucloxacillin*, or *clarithromycin* if the patient is *penicillin*-sensitive, may be indicated. If he is subject to repeated infection, he could try an antiseptic bath oil and emollient. It might be appropriate for him to use a prescribed potent topical corticosteroid, for example, *betamethasone* 0.1% for a short period to control symptoms, rather than persist with a weaker one in the long term. Once his symptoms are under control, he could use an OTC corticosteroid for short-term management of episodes of 'flare-up' plus continued use of his usual emollients. He should be advised that emollients are the mainstay of therapy and are intended for long-term daily use.

Case 3

Romiz Miah, a young adult, asks your advice about his hands, which are sore, dry and itchy. The skin is flaky but not broken, and there is no sign of secondary infection, such as weeping or pus. He says the problem is spreading and now affecting his lower arms as well. He has occasionally had the problem before, but not as severely. On further questioning, you discover that he has recently started working in his family's restaurant and has been doing a lot of washing up and cleaning.

The pharmacist's view

The most likely cause is an irritant dermatitis caused by increased exposure to water and detergents. There are no signs of infection, and it would be reasonable to recommend treatment with *topical hydrocortisone* or *clobetasone*. The skin is dry, so an ointment formulation would be helpful. Wearing 'washing-up' gloves to protect the skin would help. He should put a moisturiser or a barrier cream on his skin after washing his hands, preferably with an emollient soap substitute. Regular and frequent use of an emollient will be helpful.

The doctor’s view

If his skin does not settle with the pharmacist’s advice over the next week or two, it would be appropriate to suggest attending the GP surgery. In the consultation at the surgery, it would be useful to find out what his understanding of the problem is, how he thinks it is caused and what concerns he may have. He might, for example, think that it is caused solely by an infection and be contagious. Similarly, his expectations of what can be done to help need to be explored. He might, for instance, be expecting a complete cure; some people expect oral medication rather than topical creams. Exploration of his ideas, concerns and expectations will lead to a more satisfactory outcome. He will be more likely to adhere to the advice and treatment.

In this case, alongside barrier creams and use of washing up gloves, he might benefit from short-term use of a stronger corticosteroid cream (such as 0.1% *betamethasone*) and a change of emollient. The most important aspect for the future would be prevention by protection from frequent contact with detergents.

Case 4

You are asked to speak to a patient on the phone about some cream she purchased at your pharmacy earlier today. The patient says she bought some *clobetasone* eczema and dermatitis cream for a rash caused by a new deodorant. However, when she got back home and read the patient information leaflet (PIL), she discovered that it should not be used by breastfeeding mothers without medical advice. She had her first baby 4 months ago and is breastfeeding.

The pharmacist’s view

I did not realise that the PIL said this about breastfeeding, so this phone call put me on the spot. I thought about the possible risk and decided it was very small. The treatment was going to be used only for a few days, and the amount of steroid that might be absorbed through the skin would be absolutely tiny. However, I did not want to undermine her confidence. I was also a bit worried about where I stood if I gave advice that was different from the PIL. But in the end, I decided to use my own judgement. I told her that I would explain why the warning is in the leaflet, would give her my opinion and then see what she wanted to do. I said that if she would prefer it, she could use a simple soothing cream on the rash. I also said that if it was inconvenient for her to come back to the pharmacy, I could arrange for the other cream to be delivered by our prescription delivery van.

The patient's view

I was really worried when I got home and read the leaflet. You do not expect that applying something on a rash might mean you cannot breastfeed. I thought maybe something in the cream could be dangerous to my baby. The pharmacist spent time talking it through with me, and in the end I decided to go for the soothing cream instead, to be on the safe side.

The doctor's view

It is unlikely that the corticosteroid would cause any problems for the baby, especially as the treatment is going to be very short-term. The advice given about corticosteroids and breastfeeding in the *BNF* states that 'maternal doses of up to 40-mg *prednisolone* daily by mouth are unlikely to cause any systemic effects in infants'. As so little of this topical moderate-potency steroid is likely to be absorbed, the chances of any problems are unlikely. It is possible that the warning is included in the PIL because there is no research evidence available in this situation.

ACNE

Acne (or acne vulgaris) involves blockage or inflammation of the hair follicles and accompanying sebaceous gland. An estimated 95% of all adolescents will experience some degree of acne and most self-treat, at least initially. Mild-to-moderate acne often responds well to correctly used OTC treatments. Acne has profound effects on patients' self-esteem. Even mild acne is seen as stigmatising for teenagers and acne can have profound psychosocial effects and be a source of depression and social isolation for some. Some people with acne feel that its impact is not recognised by others, and some report that their acne is trivialised by healthcare professionals. A sympathetic response to requests for help, together with an invitation to return and report progress, can be as important as the treatment selected.

What you need to know

Age
Description
Severity
Affected areas
Duration
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Onset is usually at puberty and acne can persist for anything from a few months to several years until the late teens or early 20s.

Acne is extremely rare in young children and babies, and any such cases should be referred for investigation, since an androgen-secreting (hormone-producing) tumour may be responsible.

Sometimes, acne is seen later in life. Approximately 5% of women and 1% of men 25–40 years of age either continue to get acne lesions or develop acne (late-onset acne). Acne worsens just before or during menstruation in some women; this is thought to be due to changes in progesterone levels. For patients in whom acne begins later than the teenage years, other causes should be considered, including hyperandrogenism in women, drug therapy (such as combined hormonal contraception) and occupational factors. Oils and greases used at work can precipitate acne, and it would be worth asking about this.

Description

Hormonal changes during puberty, especially the production of androgens, are involved in the causation of acne in teenagers. Increased keratin and sebum production are important contributory factors; the increased amount of keratin leads to blockages of the follicles and the formation of microcomedones. A microcomedone can develop into a non-inflammatory lesion (comedone), which may be open (blackhead) or closed (whitehead), or into an inflammatory lesion (papule, pustule or nodule; see Figure 4.4).

It is thought that excess sebum causes an overgrowth of bacteria, particularly *Cutibacterium acnes* (previously known as *Propionibacterium acnes*), which sets off

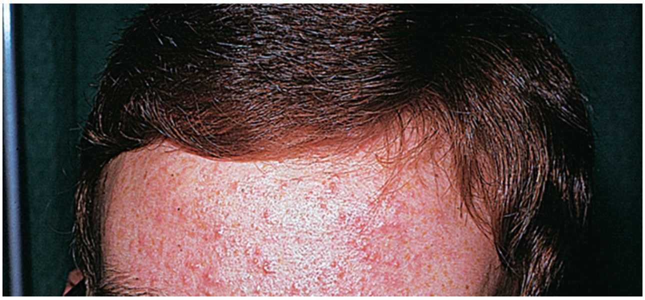

FIGURE 4.4 The seborrhoea, comedones and scattered inflammatory papules of teenage acne. *Source:* Weller *et al.* (2014). Reproduced with permission of John Wiley & Sons.

an inflammatory reaction and is involved in the development of inflammatory lesions. Acne can thus be non-inflammatory or inflammatory in nature.

Severity

Mild acne predominantly consists of non-inflammatory comedones. Moderate acne consists of a mixture of non-inflammatory comedones and inflammatory papules and pustules. Severe acne is characterised by the presence of widespread nodules and cysts, as well as a preponderance of inflammatory papules and pustules.

Comedones may be open or closed. The sebum in closed comedones cannot reach the surface of the skin. The plug of keratin, which is at the entrance to the follicle in a comedone, is initially white (a whitehead), later becoming darker coloured because of the accumulation of melanin (a blackhead). However, sebum is still produced, so swelling occurs and the comedone eventually ruptures, discharging its contents under the skin's surface. The released sebum causes an inflammatory response and small red papules and pustules appear.

In severe acne the inflammatory reaction is more pronounced; nodules (deep pustular lesions) and cysts may occur, which may be red and tender. Scarring can result from these deep lesions, although sometimes superficial lesions can also cause scarring. If the acne is particularly inflamed, cystic or nodular with a risk of scarring, referral to the GP for alternative forms of treatment, such as topical or systemic antibiotics, is needed. Patients who are particularly distressed by what appears to be mild acne may also need referral for reassurance.

Affected areas

Acne principally affects the face, the upper back and shoulders (50%) and the chest (15%). These are all areas with large numbers of sebaceous glands. It is important to ask people who come to the pharmacy with acne on the face whether they also have it on these other areas; this may be embarrassing and tends to remain 'hidden', but can be effectively treated.

Rosacea is a chronic, inflammatory skin condition that is sometimes confused with acne. It occurs in young and middle-aged adults and sometimes in older people (Figure 4.5). Only the face is affected. It can affect the cheeks, nose, eyes, chin and forehead. Rosacea has characteristic features of reddening, papules and pustules. It may be associated with recurrent episodes of facial flushing and telangiectasia (broken capillaries).

Duration

The information gained here should be considered in conjunction with facts about medication (prescribed or OTC) tried already and other medicines being taken. Persistence with daily treatment over several months is usually required for beneficial

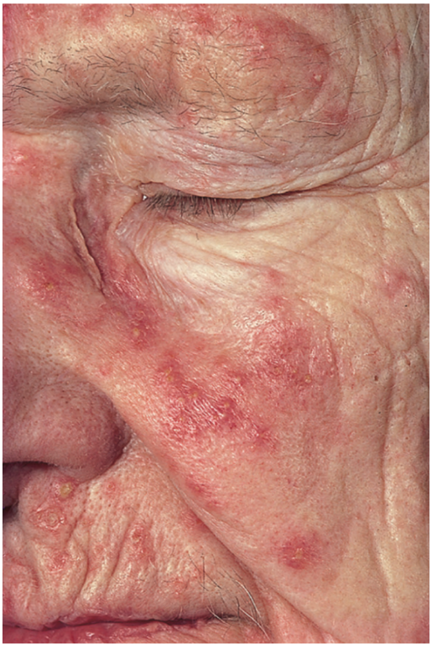

FIGURE 4.5 Typical appearance of rosacea in an older person.

effect. Acne of long duration where several OTC preparations have been correctly used without success warrants referral.

Medication

You should establish any treatment tried already and its method of use. Inappropriate use of medication, for example, infrequent application or short duration of use, could affect the chances of success.

Acne can sometimes be drug-induced. *Lithium*, *phenytoin* and the progestogens *levonorgestrel* and *norethisterone* (e.g. in the combined oral contraceptive pill) may be culprits. If acne is suspected as a result of drug therapy, patients should be advised to discuss this with their doctor.

When to refer
Severe acne
Failed medication
Suspected drug-induced acne
Considerable distress

Treatment timescale

A patient with mild-to-moderate acne that has not responded to treatment within 8 weeks should be referred to the doctor.

MANAGEMENT

OTC treatment may be recommended for mild-to-moderate acne. The general aims of therapy are to remove follicular plugs so that sebum can escape and to reduce the number of bacteria on the skin. Treatment should therefore reduce comedone formation. The most useful formulations are lotions, creams and gels. Gels with an alcoholic base dry quickly, but can be irritating. Those with an aqueous base dry more slowly, but are less likely to irritate the skin. A non-comedogenic moisturiser can help if the skin becomes dry as a result of treatment.

Benzoyl peroxide

Benzoyl peroxide has both antibacterial and anti-comedone actions and is the first-line OTC treatment for inflammatory and non-inflammatory acne. It can be highly effective, but requires patience and careful, gradual increase in duration of use and product strength. Anti-inflammatory action occurs at all strengths. Its keratolytic action increases the turnover of skin cells, helping the skin to peel. Regular application can result in improvement for most people with acne of all severities. Lack of knowledge about how best to use acne treatments together with occurrence of side effects is the main reason for patients not adhering to the recommended treatment.

Advice on using benzoyl peroxide:

- At first, *benzoyl peroxide* is very likely to produce reddening and soreness of the skin, and patients should be warned of this.
- Reddening and soreness can be minimised by beginning with the lowest strength preparation and to apply the cream, lotion or gel sparingly and infrequently during the first week of treatment.
- Wash off the application of *benzoyl peroxide* after 15 min initially, and increase exposure in increments of 15 min until the drug can be tolerated for 2 h or more.
- If irritant effects are severe and persist despite low strength and short exposure time, use of the product should be discontinued.
- Application is once or twice a day (once daily is usually sufficient) thereafter.
- Treatment should start with a 2.5% or 5% product. After 2 or 3 weeks, a higher strength preparation, such as that of 10%, may be introduced.

- Gels can be helpful for people with oily skin, and creams for those with dry skin.
- *Benzoyl peroxide* prevents new lesions forming rather than shrinking existing ones, so needs to be applied to the whole of the affected area, not just to individual comedones, and is best applied to skin following washing.
- Washing the skin with a mild soap or cleansing product, rinsed off with water and allowed to dry fully before applying *benzoyl peroxide,* can help by reducing the amount of sebum on the skin.
- Facial washes containing *benzoyl peroxide* should not be used while the patient is using another topical *benzoyl peroxide* preparation.
- *Benzoyl peroxide* increases the risk of sunburn. Avoidance of sunlight is not always possible, so the patient should use an appropriate sunscreen or protect treated skin on the chest and back by wearing a t-shirt.
- Occasionally, sensitisation to *benzoyl peroxide* may occur after a period of use. The skin becomes reddened, inflamed and sore, and treatment should be discontinued.
- Allergic contact dermatitis occurs in 1 in 500 users and should be suspected if the eyes become itchy and swollen.
- Warning should be given that *benzoyl peroxide* can bleach clothing and bedding. If it is applied at night, white sheets and pillowcases are best used and patients can be advised to wear an old t-shirt or shirt to minimise damage to good clothes.
- Contact between *benzoyl peroxide* and the eyes, mouth and other mucous membranes should be avoided.

Other keratolytics

Other keratolytics include *salicylic acid* and *potassium hydroxyquinoline sulfate*. They are second-line treatments.

Nicotinamide

Topical *nicotinamide gel* has a mild anti-inflammatory action and is applied twice daily. There is limited evidence of effectiveness. Side effects may include skin dryness and/or irritation. Several weeks' treatment may be needed to see the full effects.

Antiseptic agents

Skin washes and soaps containing antiseptic agents, such as *chlorhexidine*, are available. Such products may be useful in acne by degreasing the skin and reducing the skin flora. There is limited evidence of effectiveness.

Cosmeceuticals

Cosmeceuticals are intermediate products between licensed preparations containing medications and cosmetics. Preparations marketed for acne include those containing ceramides and retinols. There is insufficient evidence to support or refute their use.

PRACTICAL POINTS

General advice

All people with acne should be advised:

- To avoid over-cleaning the skin (which may cause dryness and irritation) – acne is not caused by poor hygiene.
- To use non-comedogenic make-up and skincare products. Check for this wording on product labels and remove all traces of make-up before bed.
- That skincare preparations with a pH close to that of the skin (5.5) may be helpful.
- To avoid picking and squeezing spots and blackheads, as this may increase the risk of scarring.
- If dry skin is a problem, use a fragrance-free water-based moisturiser.

Diet

Patients should be encouraged to eat healthily. A common belief is that chocolate and fatty foods cause acne or make it worse and this has generally been considered untrue. The role of diet in acne remains poorly understood, but emerging data suggest that high glycaemic index (GI) diets (which may include sweets or chocolate) may exacerbate acne.

Sunlight

It is commonly believed that there are beneficial effects of sunlight on acne, thought to be due to its peeling effect, which helps to unblock follicles, and its drying or degreasing effect. A systematic review found that ‘convincing direct evidence for a positive effect of sunlight exposure on acne is lacking’.

Antibiotics

The pharmacist is in a good position to ensure that acne treatments are used correctly as part of antimicrobial stewardship – if used efficiently, they may reduce the need for oral antibiotics.

Oral antibiotic therapy, available on prescription (i.e. prescription-only medicine [POM]), usually consists of tetracyclines. *Doxycycline* and *lymecycline* are most often used, as a once-daily dose is more convenient, and they can be taken with food, unlike *oxytetracycline*. *Doxycycline* causes increased sensitivity to sunlight and patients should be advised to use sunscreen. *Minocycline* should no longer be prescribed for acne as it is associated with severe adverse reactions and skin pigmentation. Tetracyclines are contraindicated in pregnancy, breastfeeding, and in children less than 12 years. The 2021 National Institute for Health and Care Excellence (NICE) Guideline on acne recommends that topical therapy (but not topical antibiotics such as clindamycin) should always be used as well when oral antibiotics are prescribed by GPs or skin specialists.

Erythromycin is also used in acne but tends to be used as second-line treatment. Bacterial resistance to *erythromycin* is now high, so it may not be effective.

Topical antibiotics (such as *clindamycin* 1%) are used as a treatment for mild-to-moderate acne, but they should always be prescribed in combination with *benzoyl peroxide* to prevent development of bacterial resistance.

Retinoids

Adapalene, *tretinoin* and *isotretinoin* are topical retinoids that are commonly prescribed by the doctor or skin specialist (POM). They can cause skin irritation, particularly in people with eczema, but most importantly they are contraindicated in pregnancy. Retinoids are teratogenic and can damage the developing baby. NICE acne guideline in 2021 advised that when prescribed by GPs or skin specialists, fixed dose combination products should be used first-line e.g. *adapalene* with *benzoyl peroxide* or *tretinoin* with *clindamycin*.

Continuous treatment

Acne is notoriously slow to respond to treatment and a period of up to 6 months may be required for maximum benefit. It is generally agreed that keratolytics, such as *benzoyl peroxide*, require a minimum of 6–8 weeks' treatment for benefits to show.

Patients should therefore be encouraged to persevere with treatment, whether with OTC or prescription products, and told not to feel discouraged if results are not immediate. NICE 2021 acne guideline recommends that a trial of therapy should be for 12 weeks before changing to another treatment. Research has shown that many teenagers have unrealistic expectations of the time needed for improvement to be seen, perhaps created by the advertising for some treatments. The patient also needs to understand that acne is a chronic condition and continuous treatment is needed to keep the problem under control.

Skin hygiene

Acne is not caused by poor hygiene or failure to wash the skin sufficiently often. This is a myth worth dispelling. Regular washing of the skin with soap and warm water or with an antibacterial soap or skin wash can be helpful, as it degreases the skin and reduces the number of bacteria present. However, the evidence for face cleansing in the management of acne is mostly from poor-quality studies.

Since personal hygiene is a sensitive area, an initial enquiry about the kind of soap or wash currently being used might be a tactful way to introduce the subject. Dermabrasion with facial scrubs removes the outer layer of dead skin and must be done gently. There is no evidence of effectiveness of this approach in acne.

OTC topical corticosteroids and acne

The use of *hydrocortisone* or *clobetasone* (or any other corticosteroid) is contraindicated in acne because steroids can potentiate the effects of androgenic hormones on the sebaceous glands, hence making acne worse.

Make-up and skincare products

Heavy, oily foundations and moisturisers are likely to exacerbate acne because they are comedogenic. Formulations labelled ‘non-comedogenic’ are now widely used. If make-up is to be worn, then water-based, rather than oily, foundations are best, and they should be removed thoroughly at the end of the day.

COMMON FUNGAL INFECTIONS

Athlete’s foot

Athlete’s foot (tinea pedis) is a superficial fungal skin infection of the feet and toes. It is very common, and at any one time, around 15–25% of people are likely to have athlete’s foot. The fungus that causes the disease thrives in warm, moist conditions. The spaces between the toes can provide a good growth environment. The problem is more common in men than in women and responds well to OTC treatment.

What you need to know

Duration
Appearance
Severity
Broken skin

Soreness
Secondary infection
Location
Previous history
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Duration

Considered together with its severity, a long-standing condition may need referral.

Appearance

Athlete’s foot usually presents as itchy, flaky skin in the web spaces between the toes. The flakes or scales of skin become white and macerated and begin to peel off. Underneath the scales, the skin is usually reddened and may be itchy and sore. The skin may be dry and scaly or moist and weeping (see Figure 4.6). Less commonly, a ‘moccasin type’ occurs as well, which is characterised by a more diffuse scaling of skin involving the entire sole and side of the foot; sometimes this is associated with vesicles (blistering).

Severity

Athlete’s foot is usually a mild fungal infection causing itching, but occasionally the skin between the toes becomes more macerated and broken, and deeper and painful fissures may develop. The skin may then become inflamed and sore. Once the skin is broken, there is the potential for secondary bacterial infection to develop. If there are indications of bacterial involvement, such as weeping, pus or yellow crusts, then referral to the doctor is needed.

Location

Classically, the toes are involved, the web space between the fourth and fifth toes being the most commonly affected. In the moccasin type, the infection may spread to the sole of the foot and to the sides and upper surface in some cases. This spread can alter the appearance of the condition and such cases are probably best referred to the GP surgery for further investigation. When other areas of the foot are involved, it can be confused with allergic dermatitis. However, in eczema or dermatitis, the spaces between the toes are usually spared, in contrast to athlete’s foot.

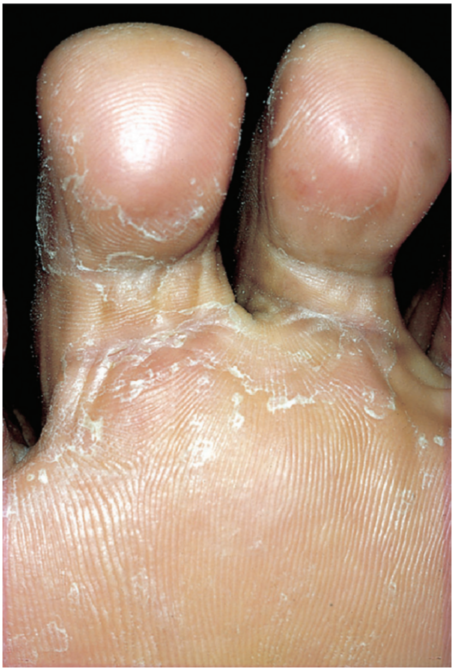

FIGURE 4.6 Athlete's foot. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

If the toenails appear to be involved, referral to the GP surgery may be necessary depending on how many toenails are affected and severity. Systemic antifungal treatment may be required to deal with infection of the nail bed where OTC treatment is not appropriate.

Previous history

Many people get recurrent athlete's foot. Ask about previous bouts and about the action taken. Any patient with diabetes who presents with athlete's foot is best referred to the doctor. People with diabetes may have impaired circulation or nerve supply to the feet and are more prone to secondary infections in addition to poorer healing of open wounds.

Medication

One or more topical treatments may have already been tried before the patient seeks advice from the pharmacist. Establish the identity of any treatment and the method of use. Treatment failure may occur simply because it was not continued for sufficiently long enough. However, if an appropriate antifungal product has been used correctly without remission of symptoms, the patient is best referred to the doctor, especially if the problem is of long duration (several weeks).

When to refer

Severe, affecting other parts of the foot
Signs of bacterial infection
Unresponsive to appropriate treatment
Patients with diabetes
Involvement of toenails

Treatment timescale

If athlete's foot has not responded to treatment within 2 weeks, patients should see their doctor.

MANAGEMENT

Most cases of athlete's foot are minor in nature and can be treated effectively by providing advice and with OTC products.

People with fungal infection of the foot should be advised on measures to reduce the risk of transmission (e.g. not scratching affected skin and not going barefoot in public places) and good foot hygiene (e.g. keeping feet cool and dry, wearing cotton socks and washing socks regularly). It is not necessary to keep children away from school.

Many OTC topical preparations are available for the treatment of athlete's foot. Formulations include creams, powders, solutions, sprays and paints. A systematic review of clinical evidence for fungal foot and skin infections compared topical allylamines (e.g. *terbinafine*), imidazoles (e.g. *clotrimazole*, *miconazole*, *econazole*, *ketoconazole* and *bifonazole*), *undecenoic acid* and *tolnaftate*. All are more effective than placebo. Topical allylamines have been tested against topical azoles; cure rates were the same. However, *terbinafine* was more effective in preventing recurrence ('sustained cure'). *Terbinafine* and *ketoconazole* have a 1-week treatment period, which some patients may prefer.

Pharmacists should instruct patients on how to use the treatment correctly and on other measures that can help to prevent recurrence (see the heading 'Practical points' in the following text). Regular application of the recommended product to clean, dry feet is essential, and treatment must be continued after symptoms have gone to ensure eradication of the fungus. Individual products state the length of treatment and generally advise use for 1–2 weeks after the disappearance of all signs of infection, as fungal spores may linger.

Imidazoles (e.g. clotrimazole, miconazole)

Topical imidazoles can be used to treat many topical fungal infections, including athlete's foot. They have a wide spectrum of action and some have been shown to have both antifungal and some antibacterial activities. The latter is useful, as secondary infection can occur. The treatment should be applied two or three times daily. Formulations include creams, powders and sprays. *Miconazole*, *clotrimazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin. *Ketoconazole* is for adults only.

Terbinafine (adults only)

Terbinafine is available in cream, spray and gel formulations for patients 16 years of age and older, and also in solution form (single-dose treatment for use in people over 18 years of age). Their licensed indications and treatment schedules are shown in the table that follows. There is evidence that *terbinafine* is better than the azoles in preventing recurrence, so it will be useful where frequent bouts of athlete's foot are a problem. *Terbinafine* can cause redness, itching and stinging of the skin; contact with the eyes should be avoided.

***Terbinafine* preparations**	**Cream (16 years of age and over)**	**Spray (16 years of age and over)**	**Solution (18 years of age and over)**	**Gel (16 years of age and over)**
Athlete's foot	Apply once or twice daily for 1 week	Apply once daily for 1 week	Apply once between the toes and to the soles and sides of the feet. Leave in contact for 24 h	Apply once daily for 1 week
Dhobi itch ('jock itch')	Apply once or twice daily for 1–2 weeks	Apply once daily for 1 week	–	Apply once daily for 1 week
Ringworm	–	Apply once daily for 1 week	–	Apply once daily for 1 week

Tolnaftate

Tolnaftate is available in powder, cream, aerosol and solution formulations and is effective against athlete's foot. It has antifungal, but not antibacterial, action, but evidence of efficacy is limited. It should be applied twice daily, and treatment should be continued for up to 6 weeks. *Tolnaftate* may sting slightly when applied to infected skin.

Undecenoates (e.g. zinc undecylenate, undecylenate acid, methyl undecylenate and propyl undecylenate)

Undecylenate (*undecenoate*) is an antifungal agent, sometimes formulated with zinc salt to give additional astringent properties. There is some limited evidence that it is more effective than placebo for treating athlete's foot. Treatment should be continued for 4 weeks.

Topical corticosteroids and combination products

Hydrocortisone may be sold OTC for allergic and irritant dermatitis, insect bites or stings and mild-to-moderate eczema. *Clobetasone* skin preparations can be sold OTC for eczema and dermatitis. On their own they cannot be recommended for athlete's foot because, although they reduce inflammation, they do not deal with the fungal infection and might make it worse.

Some combination products containing *hydrocortisone* together with an antifungal agent are available OTC for use in athlete's foot and candidal intertrigo (described as 'sweat rash' on some product packaging and information). These help relieve itch while treating infection. Treatment is limited to 7 days.

PRACTICAL POINTS

Footwear

Sweating of the feet can produce the kind of hot, moist environment in which the fungus is able to grow. Shoes that are too tight and that are made of synthetic materials make it impossible for moisture to evaporate. Wearing leather shoes allows the skin to breathe. In summer, open-toed sandals can be helpful, and shoes should be left off where possible. The wearing of cotton socks can facilitate the evaporation of moisture, whereas nylon or other synthetic fibre socks will prevent this.

Foot hygiene

The feet should be washed and carefully and thoroughly dried, especially between the toes, before the antifungal preparation is applied.

Transmission of athlete's foot

Athlete's foot is easily transmitted and is thought to be acquired by walking barefoot, for example, on changing room floors in workplaces, schools and sports clubs.

There is no need to avoid sports, but wearing some form of footwear, such as rubber sandals, is advisable.

Prevention of reinfection

Care should be taken to ensure that shoes and socks are kept free of fungus. Socks should be changed and washed regularly. Shoes can be dusted with a fungicidal powder to eradicate the fungus. The use of a fungicidal dusting powder on the feet and in the shoes can be a useful prophylactic measure and can also help to absorb moisture and prevent maceration. Patients should be reminded to treat all shoes, since fungal spores may be present.

RINGWORM (TINEA)

Ringworm of the body (tinea corporis) is a fungal infection that occurs as a circular lesion that gradually spreads after beginning as a small red papule. Often there is only one lesion, and the characteristic appearance is of a central cleared area with a red circular advancing edge – hence, the name ringworm (Figure 4.7). They are usually acquired through direct contact with an infected person or animal (for

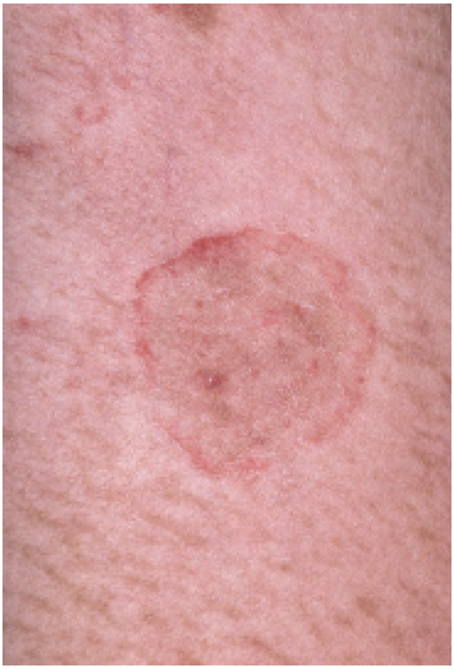

FIGURE 4.7 Typical ring-like appearance of tinea corporis.

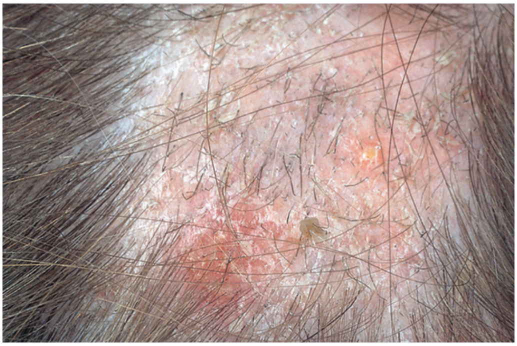

FIGURE 4.8 Tinea capitis. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

example, dogs, cats, guinea pigs and cattle), although indirect contact, such as through clothing, sometimes occurs. Advice should be given to wash towels, clothes and bed linen frequently to eradicate the fungus. Topical imidazoles, such as *miconazole*, are effective treatments.

Ringworm of the groin (tinea cruris) presents as an itchy red area in the genital region and often spreads to the inside of the thighs. It is thought to be caused by an individual transferring infection from feet (athlete's foot) or nails, by scratching. The problem is seen more in men than in women and is commonly known as 'jock itch' in the United States. People with the infection should be advised not to share towels and to wash them frequently. Wearing loose-fitting clothes made of cotton or a material designed to keep moisture away from the skin, and let things dry out, will also help. Treatment consists of topical antifungals; the use of powder formulations can be particularly valuable because they absorb perspiration.

Ringworm of the scalp (tinea capitis) is most common in preadolescent children, although it can occur in adolescents and adults. It is important to refer suspected cases to the GP surgery. It is relatively rare, but in the past used to occur in epidemics in urban areas. There may be associated hair loss and affected hairs come out easily (see Figure 4.8). Children are usually referred to a specialist by the GP. Confirmation of the diagnosis is normally required by microscopy and culture of skin scrapings and hair before treatment. Treatment is with oral antifungals. Advice should be to discard or disinfect things that might spread fungal spores to others (for example, hats, combs, pillows, blankets and scissors).

FUNGAL NAIL INFECTIONS (ONYCHOMYCOSIS)

Fungal nail infection (onychomycosis) is a common cause of deformed nails. It can involve any part of the nail: the nail plate, the nail bed or the root of the nail. The infection evolves slowly. As it evolves, the nail unit discolours, the nail plate distorts and the nail bed and adjacent tissue may thicken (see Figure 4.9). Figure 4.10 shows

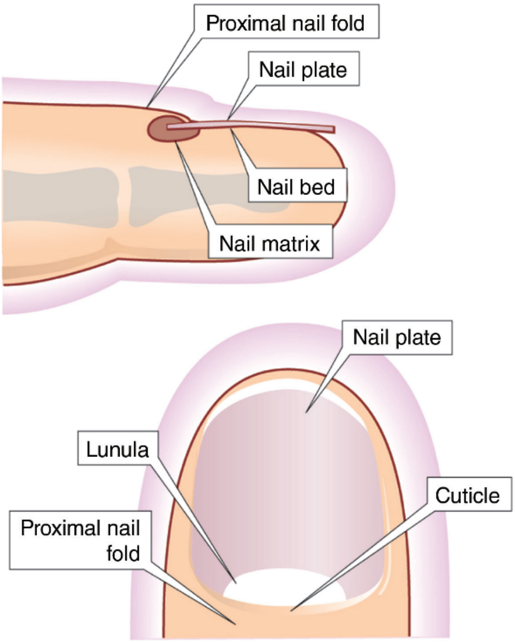

FIGURE 4.9 The nail. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

an onychomycotic nail. No treatment other than nail trimming may be appropriate for some people who are not bothered by the infected nail or who wish to avoid the possible adverse effects of drug treatment. However, others may be very distressed by the appearance of the nail or get discomfort.

An OTC nail lacquer containing 5% *amorolfine* can be used for the treatment of mild infection involving one or two nails in people aged over 18 years. The lacquer should be applied to the affected fingernails or toenails once weekly. Treatment length is 6 months for fingernails and 9–12 months for toenails. *Amorolfine* should not be used by pregnant or breastfeeding women. Reported adverse effects include nail discolouration and broken or brittle nails (these can also be effects of the infection itself). Rarely, a burning sensation of the skin is experienced, as is contact dermatitis from *amorolfine*.

Refer if the infection seems severe and if walking is uncomfortable or if the abnormal-looking nails are causing significant psychological distress. Also refer where there is a predisposing condition, such as diabetes, peripheral circulatory problems and immunosuppression. In these instances, oral treatment may be indicated (usually *terbinafine*).

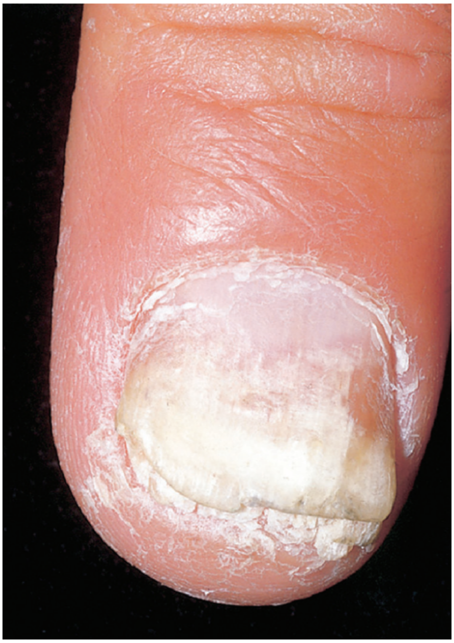

FIGURE 4.10 Tinea of a fingernail. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

INTERTRIGO (CANDIDAL SKIN CREASE INFECTIONS)

Intertrigo (sometimes known as ‘sweat rash’) is an infection of the skinfolds in which the fungus, *Candida*, is usually implicated. These infections are more likely when skin rubs on skin (such as between skinfolds in an obese person) and where heat and moisture lead to maceration and inflammation. The diagnosis is usually made from characteristic features of a rash with soreness and itching in skin flexures, such as the groin, under the breasts, axillae and buttock folds. The affected skin is typically red and moist. As the condition develops, an irregular edge and blistering or papular satellite lesions may be present.

Apart from obesity as a factor, it is important to consider an underlying cause if candidal infection of the skin is widespread or recurrent, and referral to the GP surgery for investigations and treatment may be required. Perhaps the most common association is with diabetes, particularly if glycaemic control is poor. Other commonly associated factors are the use of systemic corticosteroids or antibiotic treatment and diseases in which the barrier function of the skin is disturbed (such as psoriasis and eczema). Also consider the possibility of immunocompromise (such as human immunodeficiency virus [HIV] infection, chemotherapy and the use of immunosuppressive drugs). Iron-deficiency anaemia is also associated with this condition.

Offer advice about weight loss if obesity is a contributing factor. Advise the person to minimise skin occlusion where possible (for example, avoid tight clothing and non-breathable fabrics). Patients should wash skin regularly with a soap substitute emollient/moisturiser and ensure skin is dried adequately afterwards, especially in the skinfolds. If infection is not widespread, the pharmacist can treat adults with a topical imidazole cream (*clotrimazole*, *econazole*, *miconazole* or *ketoconazole*) or *terbinafine*. Children can be treated with topical *clotrimazole*, *econazole* or *miconazole*. If inflammation or itch is particularly problematic, consider prescribing *hydrocortisone* 1% combined with an imidazole. Do not give a corticosteroid preparation alone.

If there is no improvement after 7 days, patients should be referred to the GP surgery.

FUNGAL INFECTIONS IN PRACTICE

Case 1

John Chen, the local plumber, is in his early twenties and captains the local football team on Sunday mornings. Today, he wants to buy something for his athlete's foot, which he says he just cannot get rid of. His girlfriend bought him some cream a few days ago, but it does not seem to be having any effect. The skin between the third and fourth toes and between the second and third toes is affected. John tells you that the skin is itchy and that it looks flaky. He tells you that he has had athlete's foot before and that it keeps coming back again. He wears trainers most of the time (he has them on now) and has used the cream his girlfriend bought on most days.

The pharmacist's view

From the answers he has given, it sounds as though John does have athlete's foot. Once you have ascertained the identity of the cream he has been using, it might be appropriate to suggest the use of one of the azoles or *terbinafine*. Advice is also needed about foot hygiene and footwear and about regular and persistent use of treatment. Possibly airing his feet by wearing sandals when not at work might help. If the problem has not cleared up after 2 weeks, John should see his doctor.

The doctor's view

He probably does have athlete's foot (tinea pedis), although it is unusual for the skin not to be affected between the fourth and fifth toes. Athlete's foot usually starts with the skin being affected in this area. The advice from the pharmacist and suggested treatment are appropriate. If his symptoms do not settle with the pharmacist's suggested treatment and management, then he should see his GP. The GP could confirm the diagnosis. It would be helpful to know whether he has a history of other skin problems, such as eczema or dermatitis, and it would be important to examine his foot. If the diagnosis was in doubt, a swab or scraping could be taken to identify whether or not it was a fungal infection.

Case 2

Linda Green asks if you can recommend anything for athlete's foot. She tells you that it affects her toes and the soles and top of her feet and is extremely itchy. When asked about the skin between her toes, she tells you she does not think the rash is between the toes. She says the skin is dry and red and has been like this for several days. Ms Green has not tried any medication to treat it.

The pharmacist's view

The symptoms that Linda Green has described do not sound like those of athlete's foot. The skin between the toes is not affected, so eczema or dermatitis is a possibility. Rather than recommending a product without being able to identify the cause of the problem, it would be better to refer Ms Green to her doctor.

The doctor's view

The description that the pharmacist has obtained does not sound like athlete's foot, which usually involves the cleft between the fourth and fifth toes. Referral to the GP surgery for diagnosis would be sensible. It is possible she may have pompholyx and/or eczema. It would be helpful to know if she suffers, or has suffered, from any skin problems elsewhere on the body, for example, psoriasis or eczema. Pompholyx is also known as vesicular or dyshidrotic eczema and typically affects the hands and/or feet (when the term podopompholyx is also often used) and is intensely itchy. An early feature of pompholyx is the development of tiny blisters deep in the skin of the fingers, palms or toes. This can progress to scaling, cracking or crusting. About half of sufferers have a history of allergy or eczema. It appears more common in conditions that lead to increased sweating, such as a hot, humid climate and stress. The condition tends to come and go and is often not a problem for long periods of time. Treatment is similar to that for ordinary eczema and may include emollients, topical corticosteroids and, if the pompholyx has become infected, topical or systemic antibiotics.

Psoriasis can also affect the soles of the feet and cause thickened dry skin associated with deep painful cracks. The differential diagnosis is made easier if there are signs of psoriasis present elsewhere, such as thickened, reddened skin around the knee caps and elbows.

COLD SORES

Cold sores (herpes labialis) are caused by the herpes simplex virus (HSV). It is usually a painful, self-limiting infection of the lips, cheeks or nose or oropharyngeal mucosa (gingivostomatitis). The virus has two main subtypes. HSV type 1 is the cause of cold sores in more than 90% of cases. Rarely, infections may be caused by HSV type 2, which more commonly causes genital herpes infections.

What you need to know

Age
Duration
Symptoms and appearance
    Tingling
    Pain
Location (current and previous)
Precipitating factors
    Sunlight
    Infection
    Stress
Previous history
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Although the initial or ‘primary’ infection, which is usually subclinical and goes unnoticed, occurs in childhood, cold sores are most commonly seen in adolescents and young adults. Following the primary attack, the virus is not completely eradicated and virus particles lie dormant in nerve roots until they are reactivated at a later stage to cause ‘secondary’ symptoms. Although primary herpes infection is almost universal in childhood, not all those affected later experience cold sores, and the reason for this is not fully understood. Recurrent cold sores occur in up to 25% of all adults and the frequency declines with age, although cold sores can occur in patients of all ages. The incidence of cold sores is slightly higher in women than in men.

Many children have minimal symptoms with their primary infection. In those with active primary herpes infection of childhood, the typical picture is of a febrile child with a painful ulcerated mouth and enlarged lymph nodes. The herpetic lesions last for 3–6 days and can involve the outer skin surface as well as the inside of the mouth (gingivostomatitis). Such patients should be referred to the doctor.

Duration

The duration of the symptoms is important, as treatment with *aciclovir* (*acyclovir*) or *penciclovir* is of most value if started early in the course of the infection (during the prodromal phase). Usually the infection is resolved within 1–2 weeks. Any lesions that have persisted longer need medical referral.

Symptoms and appearance

The symptoms of discomfort, tingling or irritation (prodromal phase) may occur in the skin for 6–24 h before the appearance of the cold sore. The cold sore starts with the development of minute blisters on top of inflamed, red, raised skin. The blisters may be filled with white matter. They quickly break down to produce a raw area with exudation and crusting by about the fourth day after their appearance. By around 1 week, most lesions will have healed.

Cold sores are extremely painful and this is one of the critical diagnostic factors. Oral cancer can sometimes present a similar appearance to a cold sore. However, cancerous lesions are often painless, and their long duration differentiates them from cold sores. Another cause of a painless ulcer is that of a primary oral chancre of syphilis. Chancres normally occur in the genital area, but can be found on the lips. The incidence of syphilis has been increasing in the United Kingdom for several years.

When a cold sore occurs for the first time, it can be confused with a small patch of impetigo. Impetigo is usually more widespread and has a honey-coloured crust. It tends to spread out to form further ‘satellite’ patches and does not necessarily start close to the lips. It tends to affect children more than adults (see the section on Impetigo in Chapter 10 – Childhood Conditions). If there is doubt about the cause of the symptoms, the patient should be referred.

Location

Cold sores occur most often on the lips or face. Lesions inside the mouth or close to or affecting the eye need medical referral.

Precipitating factors

Most people with recurrent cold sores recognise things that trigger it off. Cold sores can be precipitated by sunlight, wind, fever (during infections, such as colds and flu) and menstruation, being rundown and local trauma to the skin. Physical and emotional stress can also be triggers. While it is often not possible to avoid these factors completely, advising the patient on potential triggers may be helpful for the sufferer.

Previous history

The fact that the cold sore is recurrent is helpful diagnostically. If a sore keeps on returning in the same place in a similar way, then it is likely to be a cold sore. Most sufferers experience one to three attacks each year. Cold sores occur throughout the year, with a slightly increased incidence during the winter months. Information about the frequency and severity of the cold sore is helpful when recommending referral to the doctor, although the condition can usually be treated by the pharmacist.

In patients with atopic eczema, herpes infections can become severe and widespread as the virus spreads in affected skin. This can be severe and life threatening. If this is suspected, such patients must be referred to their doctor. Immunocompromised patients, for example, those undergoing cytotoxic chemotherapy or with HIV, are also at risk of serious infection and should always be referred to the GP surgery.

Patients who are pregnant, particularly near term, should be advised to see the doctor or midwife.

Medication

It is helpful to enquire what creams and lotions have been used so far, what was used in previous episodes and what, if anything, helped last time.

As stated before, patients on chemotherapy for cancer, or drugs for HIV, should be advised to seek a medical opinion. This also applies to people on oral corticosteroids, as they may be susceptible to more severe infection.

When to refer

Babies and young children
Failure of an established sore to resolve
Severe or worsening sore
History of frequent cold sores

Sore lasting longer than 2 weeks
Painless sore
Patients with atopic eczema
Eye affected
Uncertain diagnosis
Immunocompromised patient
Pregnancy

MANAGEMENT

Aciclovir and penciclovir

Aciclovir cream and *penciclovir creams* are antivirals that reduce time to healing by 0.5–1 day and reduce pain experienced from the lesion. Treatment should be started as soon as symptoms are felt and before the lesion appears. Once the lesion has appeared, evidence of effectiveness is less convincing. The treatments can therefore be helpful for patients who suffer repeated attacks and know when a cold sore is going to appear. They can be advised to use treatment as soon as they feel the tingling or itching that precedes the appearance of a cold sore.

Aciclovir cream can be used by adults and children and should be applied four hourly during waking hours (approximately five times a day) to the affected area for 5 days. If healing is not complete, treatment can be continued for up to 5 more days, after which medical advice should be sought if the cold sore has not resolved.

Penciclovir cream can be used by those aged 12 years and over and is applied two hourly during waking hours (approximately eight times a day) for 4 days. Some patients experience a transient stinging or burning sensation after applying the cream. The affected skin may become dry and flaky. If there is a poor response, the patient should seek advice.

Patients with severe infection, or who are immunocompromised, are usually prescribed oral antiviral therapy by a doctor. Some patients who get frequent, severe cold sores either take oral antivirals long term (prophylaxis) or are given a supply to start at the onset of symptoms.

Analgesia and bland creams

Paracetamol or *ibuprofen* may help with discomfort and pain. Keeping the cold sore moist (e.g. with lip balm or *white soft paraffin*) will prevent the drying and cracking, which can predispose to secondary bacterial infection. For the patient who suffers only an occasional cold sore, a simple cream, perhaps containing an antiseptic agent, can help to reduce discomfort.

Hydrocolloid gel patch

The patch is applied as soon as symptoms start and replaced as needed. The hydrocolloid is used for its wound-healing properties. There is limited evidence of efficacy in cold sores.

Complementary therapies

Balm mint extract and tea tree oil applied topically may have an effect on pain, dryness and itching, but there is insufficient evidence to assess whether they have an effect on healing, time to crusting, severity of an attack or rate of recurrence. Low-energy, non-thermal, narrow-waveband light within the infrared spectrum may have an effect on cold sores, although there is insufficient evidence that they are effective.

PRACTICAL POINTS

Preventing cross infection

HSV type 1 is contagious and transmitted by direct contact, so advise the patients to wash their hands before and after applying treatment to the cold sore. To avoid transmission to the eyes, people who use contact lenses should take particular care so as to that lenses are not contaminated, and care in applying eye make-up is also important. It is sensible not to share cutlery, towels, toothbrushes or face flannels or to kiss people until the cold sore has cleared up. Oral sex with someone who has a cold sore means a risk of genital herpes and should be avoided until the cold sore has gone. This latter advice can be imparted via a PIL.

Use of sunscreens

Sunscreen creams (with sun protection factor [SPF] 15 or above) applied to and around the lips when patients are subject to increased sun exposure (e.g. during skiing and beach holidays) can be a useful preventive measure if the patient recognises sunlight as a trigger.

Stress

Sources of stress could be looked at to see if changes are possible.

Eczema herpeticum

Patients with atopic eczema are very susceptible to herpetic infection and show an abnormal response to the virus with widespread lesions and sometimes involvement of the central nervous system. Patients with severe eczema should avoid contact with anyone who has an active cold sore. If this severe infection is suspected, immediate referral to the doctor or out-of-hours service is required.

SUNBURN

Pharmacists frequently see patients asking for advice on managing sunburn. This is usually something that can be readily managed by using treatments to reduce symptoms while the condition heals, and with general advice. Some cases where there is swollen skin or blistering or broken skin should be referred to the GP surgery or out-of-hours service – practice nurses have a lot of experience in dressing and managing these. All babies and small children with significant sunburn should also be referred. It is also important to be aware of the signs of severe sunburn and the symptoms of heatstroke that may require more urgent referral to accident and emergency (A&E) – see Box 4.1. Treatment in hospital may occasionally be needed for people with severe burns; this is usually with burn creams and special burn dressings.

Box 4.1 Signs and symptoms of sunburn and heatstroke requiring urgent referral

Signs of severe sunburn	**Symptoms/signs of heat exhaustion or heatstroke** **Call 999 if persist after 30 min of resting in a cool place and taking fluids**	**Symptoms/signs of severe heat exhaustion or heatstroke** **Call 999**
Extensive skin blistering	High body temperature (>38 °C)	Very high body temperature (>40 °C)
Extensive skin swelling – oedema	Fatigue, weakness, dizziness, feeling faint, headache	Not sweating even while feeling too hot
Skin loss – partial or full thickness	Nausea or vomiting	Fast breathing or shortness of breath

Often associated with systemic symptoms – heat exhaustion/sunstroke	Rapid pulse	Rapid pulse
	Cramps in the arms, legs or stomach	A fit (seizure)
	Confusion	Altered behaviour – irritability, agitation, impaired judgement, confusion, disorientation, hallucinations
		Loss of consciousness

General advice for mild-to-moderate sunburn

Mild-to-moderate sunburn usually takes the form of erythema (redness) of the skin, which is tender and blanches on pressure. It is sore and may be very painful. There may be one or two small areas (a few centimetres across) of swelling with some blistering. The erythema usually occurs 2–6 h after sun exposure and peaks at 12–24 h. It resolves over 4–7 days, usually with skin scaling and peeling.

To help relieve the acute symptoms:

- Cool the skin by having a cold bath or shower, sponging it with cold water or holding a cold flannel to it
- Use after sun lotions or emollients (such as those containing aloe vera) to soothe and moisturise the skin
- Drink plenty of fluids to cool you down and prevent dehydration
- Take oral painkillers, such as *ibuprofen* or *paracetamol*, to relieve pain (do not give *aspirin* to children under 16)

Avoid sunlight, including through windows, and cover up the affected areas of skin until it is healed.

Ibuprofen 1% with *isopropyl myristate* 10% emulsion is an OTC option available on the general sales list (GSL) for topical pain relief of mild-to-moderate sunburn, which also acts as an emollient. It is not suitable for children under the age of 12 years, or for pregnant or breastfeeding women. It is not a sunscreen/sunblock. It is lightly applied to the affected skin and is massaged gently in. It can be applied every 2 h (no more than eight times a day). No more than 12 ml should be applied at a time, or more than 100 ml in a day. It should be used for a maximum of 2–3 days. A drawback is that it should not be used at the same time as oral *ibuprofen*.

Advice for heat exhaustion or heatstroke

Many patients will get better with four simple first-aid measures:

1. Move to a cool place.
2. Lie down and raise their feet slightly.
3. Drink plenty of water, or sports or rehydration drinks.
4. Cool the skin – spray or sponge with cool water and use a fan. Cold packs around the armpits or neck are good, too. Do not put ice or cold packs directly on sunburn.

If the patient does not respond to these measures in 30 min, then urgent medical help should be obtained, or call 999.

WARTS AND VERRUCAE

Cutaneous warts are small, rough growths that are caused by infection of skin cells with certain strains of the human papillomavirus (HPV). They can appear anywhere on the skin, but are most commonly seen on the hands and feet. A verruca (also known as a plantar wart) is a wart on the sole of the foot. They have a high incidence in children. Once immunity to the infecting virus is sufficiently high, the lesions will disappear, but many patients and parents prefer active treatment. Preparations are available OTC, and correct use is required to break down hard skin while preventing damage to healthy surrounding skin.

What you need to know

Age
Adult or child
Appearance and number of lesions
Location
Duration and history
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Warts can occur in children and adults; they are more common in children, and the peak incidence is found between the ages of 12 and 16 years. The peak incidence is thought to be due to higher exposure to the virus in schools and sports facilities. Warts and verrucae are caused by the same virus, but the appearance of the infection is altered by the location.

Appearance

Warts appear as raised fleshy lesions on the skin with a roughened surface (Figure 4.11); the most common type is said to resemble a cauliflower. The appearance can vary, mostly related to where they occur on the body. Verrucae occur on the weight-bearing areas of the sole and heel and have a different appearance from warts because the pressure from the body's weight pushes the lesion inwards, sometimes producing pain when weight is applied during walking. Warts have a network of capillaries, and, if pared, thrombosed, blackened capillaries or bleeding points will be seen. The presence of these capillaries provides a useful distinguishing feature between calluses and verrucae on the feet: if a corn or callus is pared, only layers of white keratin will be present. The thrombosed capillaries are sometimes thought, incorrectly, to be the root of the verruca by the patient. The pharmacist can correct this misconception when explaining the purpose and method of treatment (discussed in the following text).

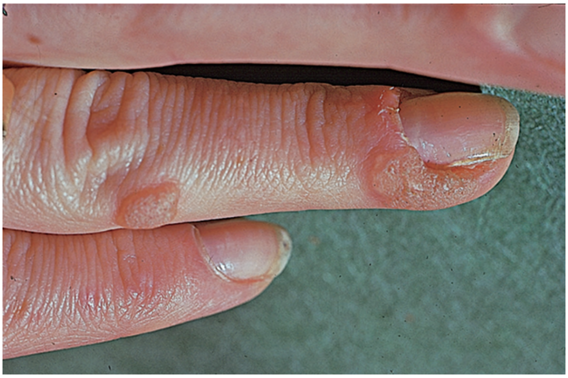

FIGURE 4.11 Typical appearance of common warts on the fingers. *Source:* Weller *et al.* (2014). Reproduced with permission of John Wiley & Sons.

Multiple warts

Warts may occur singly or as several lesions. If they are multiple, they can be quite unsightly and cause distress.

Molluscum contagiosum is a condition in which the lesions may resemble warts, but another type of virus is the cause (a poxvirus). They are mostly seen in infants and preschool children. The lesions are pinkish or pearly white papules with a central dimple and are up to 5 mm in diameter (see Figure 4.12). They are said to resemble small sea shells stuck on the skin, and the infection easily passes from child to child – contagious (hence the name). The location of molluscum tends to differ from that of warts – the eyelids, face, armpits and trunk may be involved. The lesions are harmless and usually resolve in a few months without scarring. They are best left untreated, but if parents are concerned, they should be referred to the GP surgery for reassurance (and to be dissuaded from treatment). Very rarely molluscum can be a severe problem in people with HIV or who are immunosuppressed.

Location

The palms or backs of the hands are common sites for warts, as is the area around the fingernails. People who bite or pick their nails are more susceptible to warts around them, as this causes inoculation of the skin with the virus. Warts sometimes occur on the face and referral to the doctor is the best option in such cases. Since treatment with OTC products is destructive in nature, self-treatment of facial warts can lead to scarring and should never be attempted.

Parts of the skin that are subject to regular trauma or friction are more likely to be affected, since damage to the skin facilitates entry of the virus. Verrucae on the sole of the foot may be present singly or as several lesions. Sometime pain on bearing weight draws attention to the lesion.

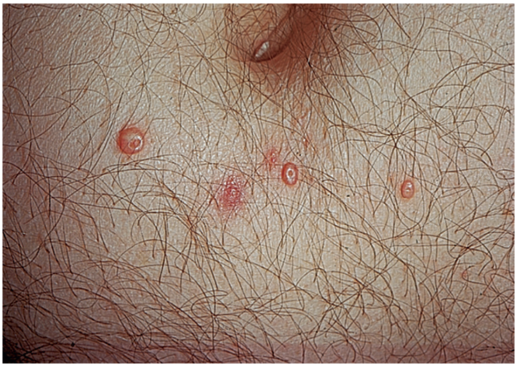

FIGURE 4.12 An umbilicus surrounded by umbilicated papules of molluscum contagiosum. *Source:* Weller *et al.* (2014). Reproduced with permission of John Wiley & Sons.

Anogenital

Anogenital warts are caused by a different type of HPV and require medical referral for examination, diagnosis and treatment. They are sexually transmitted and patients can self-refer to their local sexual health clinic. Anogenital warts in children raise concerns about sexual abuse and all cases must be referred to the GP surgery.

Duration and history

It is known that most warts will disappear spontaneously within a period of 6 months to 2 years. The younger the patient, the more quickly the lesions are likely to remit, as immunity to the virus develops more rapidly.

Any unusual change in the appearance of a wart should be treated with suspicion and referral to the doctor is advised. Skin cancers are sometimes mistakenly thought to be warts by patients, and the pharmacist can establish how long the lesion has been present and any changes that have occurred. Signs related to skin cancer are described in the section ‘Practical points’ in the following text.

Medication

People with diabetes should not use OTC products to treat warts or verrucae without advice from a nurse or doctor, since impaired circulation, if present, can lead to delayed healing, ulceration or even gangrene. Also, peripheral neuropathy, a complication of diabetes, may mean that even extensive damage to the skin will not provoke a sensation of pain.

Warts can be a major problem if the immune system is suppressed by either disease (e.g. HIV infection and lymphoma) or drugs (e.g. *ciclosporin* to prevent rejection of a transplant).

The pharmacist should ask whether any treatment has been attempted already and, if so, its identity and the method of use. A common problem is that treatments are not used for a sufficiently long period of time because patients tend to expect a fast cure.

When to refer

Changed appearance of lesions: size and colour
Bleeding
Itching
Genital warts
Facial warts
Immunocompromised patients

Treatment timescale

Treatment with OTC preparations should produce a successful outcome within 3 months; if not, referral to the GP surgery (or podiatrist/chiropodists for verrucae) may be necessary.

MANAGEMENT

Many warts can be simply left alone and go away without treatment. If a patient is distressed or embarrassed by the appearance of a wart or is getting pain from a verruca, it is reasonable to attempt treatment. Many patients wish to try OTC treatments; *salicylic acid* and *cryotherapy* are available. Treatment of warts and verrucae aims to reduce the size of the lesion by gradual destruction of the skin. Continuous application of the selected preparation for several weeks or months may be needed, and it is important to explain this to the patient. Surrounding healthy skin may need to be protected during treatment (see the section 'Practical points' in the following text).

OTC wart products should not be used on the face, on skinfolds (such as the groin or axillae), on moles or birthmarks, or lesions with red edges, or an unusual colour. They must not be used on open wounds, on irritated or reddened skin or any area that appears to be infected.

Salicylic acid

Salicylic acid softens and destroys the lesion by chemically burning it, thus mechanically removing affected tissue. Preparations are available in a variety of strengths and formulations, including gels, plasters and paints. *Lactic acid* is included in some preparations with the aim of enhancing availability of the *salicylic acid*. Preparations should be kept well away from the eyes and applied with an applicator, not with the fingers.

Cryotherapy

Dimethyl ether and *propane* can be used to freeze warts and are available in several preparations for home use for adults and children. The minimum age for use is 4 years for most preparations. There is little evidence from which to judge their effectiveness in home use rather than when applied by a doctor. The treatment should not be used by people with diabetes or by pregnant women. These should not be used on warts that are adjacent to finger nails (periungual). The wart should fall off about 10 days after application. A second application can be made 14 days after the first if needed.

PRACTICAL POINTS

Application of treatments

Treatments containing *salicylic acid* should be applied once a day, usually at night. The treatment is helped by prior soaking of the affected hand or foot in warm water for 5–10 min to soften and hydrate the skin, increasing the action of the *salicylic acid*. The main reason for using it on a verruca is to soften and remove the hard overgrowth of keratin that causes symptoms by digging into the foot when bearing weight. Removal of the dead skin from the surface of the wart by gentle rubbing with a pumice stone or emery board after it has been applied helps to achieve this and also helps the next application work on the layer underneath. Occlusion of the wart using an adhesive plaster helps to keep the skin soft, maximising the effectiveness of *salicylic acid*.

The main risk with *salicylic acid* preparations is in causing chemical burns and irritation of the unaffected skin. Protection of the healthy surrounding skin can be achieved by applying a layer of petroleum jelly.

Podiatrists (chiropodists) frequently see patients with verrucae and can give advice to patients and provide treatment, if indicated.

Length of treatment required

Continuous treatment with *salicylic acid* is usually needed for up to 3 months for both warts and verrucae. Patients need to know not to expect instant or rapid success. An invitation to come back and report progress can help the pharmacist monitor the treatment. The patient can easily take a digital photo to monitor progress, if they wish.

If treatment has not been successful after 3 months and the wart is causing symptoms or upset, referral for consideration of removal using cautery, curetting or liquid nitrogen may be required. Some podiatrists/chiropodists provide these treatments for verrucae, but the patient may have to pay. Not all GP surgeries will treat warts or provide cryotherapy.

Verrucae and swimming pools

Viruses can penetrate moist skin more easily than dry skin. Theoretically, walking barefoot on abrasive surfaces beside swimming pools or in changing areas can lead to infected material from the verruca being rubbed into the flooring. The Amateur Swimming Association gives guidance regarding this at `www.swimming.org/learntoswim/swimming-and-verrucas-the-facts`. They advise against the use of plastic socks and say the use of a waterproof plaster is sufficient to cover the verruca during swimming. Flip flops or other appropriate footwear should be worn in communal showers.

Warts and skin cancer

Premalignant and malignant lesions can sometimes be thought to be warts by the patient. There are different types of skin cancer. All cases of suspected cancer should be referred to the GP surgery. They can be divided into two categories: non-pigmented (i.e. skin-coloured) and pigmented (i.e. darker than normal skin colour).

Non-pigmented: In this group, which is more likely to occur in the elderly, the signs might include a persisting small ulcer or sore that slowly enlarges but never seems to heal. Sometimes a crust forms, but when it falls off, the lesion is still present. The main type, squamous cell carcinoma, usually appears on the head and neck or the back of the hand, and is related to long-term sun damage. In the case of a basal cell carcinoma (rodent ulcer), the lesion typically starts off as a nodule that ulcerates and then has a circular, raised and rolled edge.

Pigmented: Pigmented lesions or moles can turn malignant. These can occur in patients of a much younger age than the first group. They can be difficult to differentiate from benign moles, which are common. A National Institute for Health and Care Excellence (NICE) guideline (NG12, 2015) – *Suspected cancer: recognition and referral* – gives guidance on the nature or appearance of pigmented skin lesions that warrant referral for further urgent investigation using a seven-point checklist score of three or more.

Major features of the lesions (scoring two points each) are:

Change in size
Irregular shape
Irregular colour

Minor features of the lesions (scoring one point each) are:

Largest diameter 7 mm or more
Inflammation
Oozing
Change in sensation

Another useful way to recall ‘danger signs’ is using the mnemonic ABCDE:

A: Asymmetrical moles – irregular in shape
B: Border of a mole – blurred or has jagged edges
C: Colour of a mole – if a mole has more than one colour
D: Diameter (width) – irregular moles are usually larger than 7 mm
E: Evolving – melanoma moles often change (evolve)

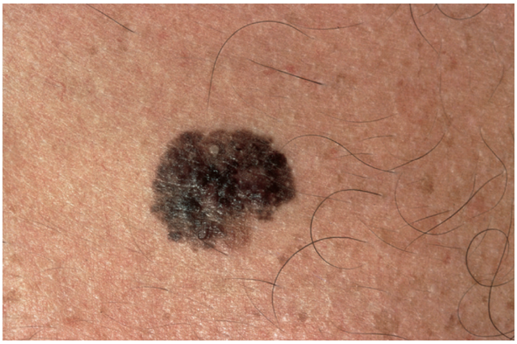

FIGURE 4.13 Malignant melanoma.

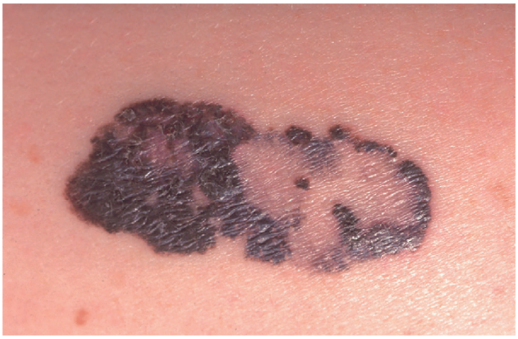

FIGURE 4.14 Superficial spreading melanoma. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

Figures 4.13 and 4.14 show a melanoma and a superficial spreading melanoma, respectively.

SCABIES

Scabies is an intensely itchy skin infestation caused by the human parasite *Sarcoptes scabiei* and is more common during the winter months. The itch can be severe, particularly at night, and scratching can lead to changes in the appearance of the skin, so a careful history is needed. Scabies goes through peaks and troughs of prevalence, with a peak occurring every 15–20 years, and pharmacists need to be aware when a peak is occurring.

What you need to know

Age
Infant, child or adult
Symptoms
Itching, rash
Presence of burrows
History
Signs of infection
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Scabies infestation can occur at any age from infancy onwards; it is most common between ages 10 and 19 and more often found in women than men. Recently, scabies has become more frequent in the elderly in residential and nursing-home environments. Refer infants and young children to the doctor if scabies is suspected. If a school or nursing-home outbreak is suspected, the pharmacist should inform local GP surgeries or the public health/health protection department.

Symptoms

The scabies mite burrows down into the skin and lives under the surface, and a typical infestation involves 10–20 mites. Their presence sets up an allergic reaction, thought to be due to the insect's coat and exudates, resulting in intense itching. A characteristic feature of scabies is that itching is worse at night and can lead to loss of sleep.

Burrows can sometimes be seen as small threadlike grey lines. The lines are raised, wavy and about 5–10 mm long. Commonly infested sites include the web space of the fingers and toes, wrists, armpits, around nipples, buttocks and the genital area. The presence of itchy papules and nodules on the penis and scrotum is usually indicative of sexually acquired scabies. Patients may have a rash that does not always correspond to the areas of infestation. The rash may be patchy and diffuse or dense and erythematous. It is more commonly found around the midriff, underarms, buttocks, inside the thighs and around the ankles.

In adults, scabies rarely affects the scalp and face, but in children aged 2 years or under and in the elderly, involvement of the head is more common, especially in the area behind the ear (postauricular fold).

Burrows may be indistinct or may have been disguised by scratching that has broken and excoriated the skin. Scabies can mimic other skin conditions and may not present with the classic features. The itch tends to be generalised rather than in specific areas. In immunocompromised or debilitated patients, and in the elderly, scabies presents differently. The affected skin can become thickened and crusted and resembles psoriasis; this is called crusted or Norwegian scabies. It is a 'hyperinfestation' with millions of mites, thought to be due to the poor immune response. Mites survive under the crust and any sections that become dislodged are infectious to others because of the many living creatures they contain.

History

The itch of scabies can take several (6–8) weeks to develop in someone who has not been infested previously. The scabies mite is transmitted by close personal contact, so patients can be asked whether anyone else they know is affected by the same symptoms, for example, other family members, boyfriends and girlfriends.

If the scabies has been caught from a sexual contact, or this is suspected because of genital lesions, it is usually advisable for the person to be directed to a sexual health clinic for treatment so that other sexually transmitted diseases can be excluded.

Signs of infection

Scratching can lead to excoriation, so secondary infections, such as impetigo, can occur. The presence of a weeping yellow discharge or yellow crusts would be indications for referral to the GP surgery for treatment.

Medication

It is important for the pharmacist to establish whether any treatment has been tried already and, if so, its identity. The patient should be asked about how any treatment has been used, since incorrect use can result in treatment failure. The itch of scabies may continue for several days or even weeks after successful treatment, so the fact that itching has not subsided does not necessarily mean that treatment has been unsuccessful.

When to refer

Babies and young children
Crusted scabies
Scabies outbreak in institutions (schools, nursing homes)

Acquired through sexual contact
Infected skin
Treatment failure
Unclear diagnosis

MANAGEMENT

There is evidence from a systematic review of clinical trials of scabies treatments that *permethrin* is highly effective. The evidence for *malathion* is less robust. *Permethrin* cream is used first line and *malathion* can be used where *permethrin* is not suitable.

The treatments are applied to the entire body, including the neck, face, scalp and ears in adults. Particular attention should be paid to the webs of fingers, toes and soles of the feet and under the ends of the fingernails and toenails. *Permethrin* is usually applied in the evening and left on overnight (*malathion* is left on for 24 h). Two treatments are recommended, 7 days apart. Treat all members of the household, close contacts and sexual contacts with the topical insecticide/acaricide (even in the absence of symptoms).

Machine-wash (at 60 °C or above) all clothes, towels and bed linen on the day of application of the first treatment.

Permethrin

The cream formulation is used in the treatment of scabies. For a single application in an adult, 30–60 g of cream (one to two 30-g tubes) is needed. The cream is applied to the whole body and left on for 8–12 h before being washed off. If the hands are washed with soap and water within 8 h of application, cream should be reapplied to the hands. Medical supervision is required for its use in children under 2 years and in elderly patients (aged 70 years and over). *Permethrin* can itself cause itching and reddening of the skin. Patients who are allergic to chrysanthemum plants may be allergic to *permethrin* and *malathion* should be used.

Malathion

Malathion is effective for the treatment of scabies and pediculosis (head lice). For one application in an adult, 100 ml of lotion should be sufficient. The aqueous lotion should be used in scabies. The lotion is applied to the whole body. It can be poured into a bowl and then applied on cool, dry skin using a clean, broad paintbrush or cotton wool. The lotion should be left on for 24 h, without bathing, after which it is washed off. If the hands are washed with soap and water during the 24 h, *malathion* should be reapplied to the hands. Skin irritation may sometimes occur. Medical supervision is needed for children under 6 months of age.

PRACTICAL POINTS

1. The itch will continue and may become worse in the first few days after treatment. The reason for this is thought to be the release of allergen from dead mites. Patients need to be told that the itch will not stop straight away after treatment. *Crotamiton* cream or lotion can be used to relieve the symptoms, provided the skin is not badly excoriated. A sedating oral antihistamine may be considered if the itch is severe. Itching generally subsides by about 2 weeks after successful treatment, and if it continues for longer than 2–4 weeks, referral may be needed.
2. In the past, treatment was applied after a hot bath. This is not necessary and there is even evidence that a hot bath may increase absorption into the blood, removing treatment from its site of action on the skin. The treatment should be applied to cool, dry skin immediately before bedtime and allowing time for the cream to be absorbed or the lotion to dry. Because the hands are likely to be affected by scabies, it is important not to wash the hands after application of the treatment and to reapply the preparation if the hands are washed within the treatment period.
3. All members of the family or household should be treated, preferably on the same day, whether they have symptoms or not. Because the itch of scabies may take up to 8 weeks to develop, people may be infested but symptomless. The incubation period of the scabies mite is 3 weeks, so reinfestation may occur from other family or household members.
4. The scabies mite can live only for around 1 day after leaving its host and transmission is almost always caused by close personal contact. However, it is possible that reinfestation could occur from bedclothes or clothing and this can be prevented by washing them at a minimum temperature of 60 °C after the first treatment.

Fleas

Another cause of possible infestation is fleas from pets. Patients may present with small, reddened swellings, often on the lower legs and around the ankles where the flea jumps on, usually from the floor or carpets. Questioning may reveal that a pet cat or dog has recently been acquired or that a pet has not been treated with insecticide for some time. Regular checks of pets for fleas and use of insecticides will prevent the problem occurring in the future. A range of proprietary products is available to treat either the pet or bedding and carpets. Vets can give useful advice on fleas in the house and on pets. A second treatment should be applied 2 weeks after the first to eradicate any fleas that have hatched since the first application. The itch of flea bites can be treated with *topical hydrocortisone* in people over 10 years. Alternatively, an antipruritic, such as *crotamiton* (with or without *hydrocortisone*) or *calamine* cream, can be recommended.

DANDRUFF

Dandruff is a chronic relapsing condition of the scalp, which responds to treatment, but often returns when treatment is stopped. The condition usually appears during puberty and reaches a peak in early adulthood. Dandruff has been estimated to affect one in two people aged between 20 and 30 years and up to four in ten of those aged between 30 and 40 years. It is considered to be a mild form of seborrhoeic dermatitis, associated with an overgrowth of *Malassezia* yeasts. Diagnosis is usually straightforward and effective treatments are available OTC.

What you need to know

Appearance
Presence of scales
Colour and texture of scales
Location: scalp, eyebrows, paranasal clefts and others
Severity
Previous history
    Psoriasis
    Seborrhoeic dermatitis
Aggravating factors
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Appearance

Dandruff is characterised by greyish-white flakes or scales on the scalp and an itchy scalp as a result of excessive scaling. It may also affect beards. In dandruff, the epidermal cell turnover is at twice the rate of those without the condition. A differential diagnosis for severe dandruff could be psoriasis where there is also rapid cell turnover. In the latter condition, both the appearance and the location are usually different. In more severe cases of seborrhoeic dermatitis, the scales are yellowish and greasy-looking, and there is usually some inflammation with

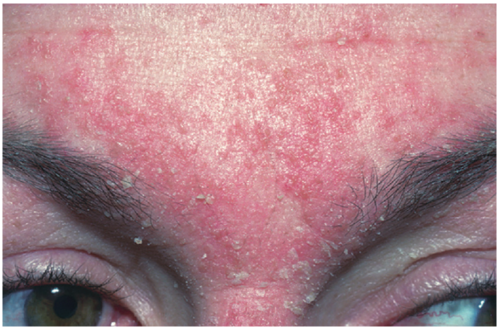

FIGURE 4.15 Seborrhoeic dermatitis. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

reddening and crusting of the affected skin (Figure 4.15). In psoriasis, the scales are silvery white and associated with red, patchy plaques and inflammation (Figure 4.16).

Location

In dandruff, the scalp (and sometimes beard) is the only area affected. More widespread seborrhoeic dermatitis affects the areas where there is greatest sebaceous gland activity, so it can affect eyebrows, eyelashes, beard and moustache, paranasal clefts, behind the ears, nape of neck, forehead and chest.

In infants seborrhoeic dermatitis is common and occurs as cradle cap, appearing in the first 12 weeks of life.

Psoriasis can affect the scalp, but other areas are also usually involved. The knees and elbows are common sites, but the face is rarely affected. This latter point distinguishes psoriasis from seborrhoeic dermatitis, where the face is often affected.

Another condition that may look similar to dandruff is dermatitis of the scalp caused by things such as allergy to a shampoo constituent or to hair dye.

Severity

Dandruff is generally a mild condition. However, the itching scalp may lead to scratching, which may break the skin, causing soreness and the possibility of infection. If the scalp is very sore or there are signs of infection (crusting or weeping), referral would be indicated.

Previous history

Since dandruff is a chronic relapsing condition, there will usually be a previous history of fluctuating symptoms. There is a seasonal variation in symptoms, which generally improve in summer in response to ultraviolet B (UVB) light. *Malassezia* yeasts are unaffected by ultraviolet A (UVA) light.

Aggravating factors

Hair dyes and perms can irritate the scalp. Inadequate rinsing after shampooing the hair can leave traces of shampoo, causing irritation and itching.

Medication

Various treatments may already have been tried. It is important to identify what has been tried and how it was used. Most dandruff treatments need to be applied to the scalp and be left for 5 min for full effect. However, if an appropriate treatment has been correctly used with no improvement, referral should be considered.

When to refer

Suspected psoriasis
Severe cases: seborrhoeic dermatitis
Signs of infection
Unresponsive to appropriate treatment

Treatment timescale

Dandruff should start to improve within 1–2 weeks of beginning treatment.

MANAGEMENT

The aim of the treatment is to reduce the level of *Malassezia* yeasts on the scalp; therefore, agents with antifungal action are effective. *Ketoconazole*, *selenium sulphide*, *zinc pyrithione* and *coal tar* are all effective. The results from studies on seborrhoeic dermatitis suggest that *ketoconazole* is the most effective and *coal tar* is the least effective of these choices. Most treatments need to be left on the scalp (and beard where relevant) for 5 min for full effect (see instructions with individual products).

Ketoconazole

Ketoconazole 2% shampoo is used twice a week for 2–4 weeks, after which usage should reduce to weekly or fortnightly as needed to prevent recurrence. It is considered first line in moderate-to-severe dandruff.

The shampoo can also be used for other areas affected by seborrhoeic dermatitis. While shampooing, the lather can be applied to the other affected areas and left before rinsing.

Ketoconazole is not absorbed through the scalp and side effects are extremely rare. There have been occasional reports of allergic reactions.

Zinc pyrithione

Zinc pyrithione is an active ingredient in several ‘antidandruff shampoos’ and is effective against dandruff. It should be used twice weekly for the first 2 weeks and then once weekly as required.

Selenium sulphide 2.5%

Selenium sulphide has been shown to be effective. Twice-weekly use for the first 2 weeks is followed by weekly use for the next 2 weeks; then it can be used as needed. It is advised to massage it into the scalp and leave on for 2–3 min. It can cause a burning sensation (and rarely, blistering) if left on for longer. Jewellery should be removed, as this can be discoloured by selenium. The hair and scalp should be thoroughly rinsed after using *selenium sulphide* shampoo; otherwise, discolouration of blond, grey or dyed hair can result. Products containing *selenium sulphide* should not be used within 48 h of colouring or perming the hair. Contact dermatitis has occasionally been reported. *Selenium sulphide* should not be applied to inflamed or broken skin.

Coal tar

Findings from research studies indicate that *coal tar* is the least effective of the agents for seborrhoeic dermatitis. It may be useful in dandruff, which is a less severe condition, and individual response and preference may determine if patients choose to use it. Modern formulations are more pleasant than the traditional ones, but some people still find the smell of *coal tar* unacceptable. *Coal tar* can cause skin sensitisation and is a photosensitiser.

PRACTICAL POINTS

Continuing treatment

Patients need to understand that the treatment is unlikely to cure their dandruff permanently and that it will be sensible to use the treatment on an intermittent basis in the longer term to prevent their dandruff from coming back.

Treating the scalp

It is the scalp that needs to be treated rather than the hair. The treatment should be applied to the scalp and massaged gently. Simple measures, such as softening of scales with emollient, gentle brushing to loosen scales and washing of the scalp with baby shampoo, may also help.

Standard shampoos

There is debate among experts as to whether dandruff is caused or aggravated by infrequent hair-washing. However, it is generally agreed that frequent washing (at least three times a week) is an important part of managing dandruff. Between applications of their treatment, the patients can continue to use their normal shampoo. Some may wish to wash their hair with their normal shampoo before using the dandruff-treatment shampoo.

Hair products

Gel, mousse and hairspray can still be used and will not adversely affect treatment for dandruff.

PSORIASIS

Psoriasis is a chronic inflammatory disease with predominantly skin manifestations. It is characterised by scaly skin lesions, which can be in the form of patches, papules or plaques. Arthritis is also sometimes seen with the disease and may be under-recognised. Itch is often a feature.

Psoriasis occurs worldwide with variation in incidence between different ethnic groups. The incidence for White Europeans is about 2%. Although there is a genetic influence, environmental factors are also thought to be important.

People with psoriasis usually present to the doctor rather than the pharmacist. At the time of first presentation, the doctor is the most appropriate first line of help, and pharmacists should always refer cases of suspected but undiagnosed psoriasis or suspected related arthritis. The diagnosis is not always easy and needs confirming. In the situation of a confirmed diagnosis in a relatively chronic situation, the pharmacist can offer continuation of the treatment where products are available OTC.

Many patients learn to manage their psoriasis themselves, but will seek help from time to time. In this situation, continued support and monitoring by the pharmacist are reasonable, with referral back to the doctor or specialist nurse when there is an exacerbation, or for periodic review. Jointly agreed guidelines between pharmacist and doctors are valuable here.

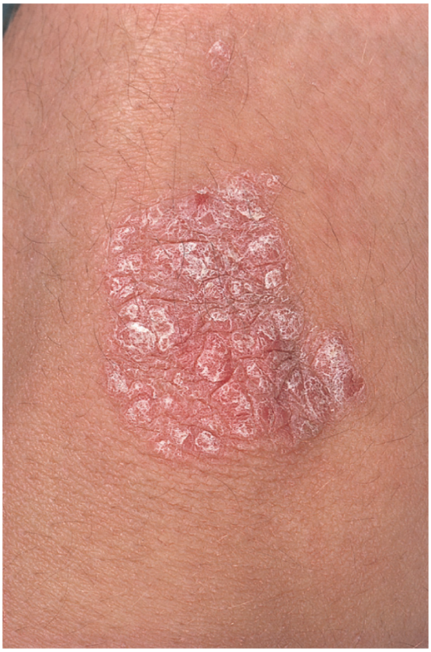

FIGURE 4.16 Typical ‘plaque’ appearance of psoriasis vulgaris.

What you need to know

Appearance
Psychological factors
Diagnosis
Arthritis
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Appearance

In its most common form, there are raised, large, red, scaly plaques over the extensor surfaces of the elbow and knee (Figure 4.16). Silvery scales usually cover the plaques. The plaques are usually symmetrical, and sometimes there is a patch present over the lower back area. The scalp is often involved (see Figure 4.17). Psoriasis can affect the soles of the feet and the palms of the hand. Nail changes with pitting and lifting are also frequently seen.

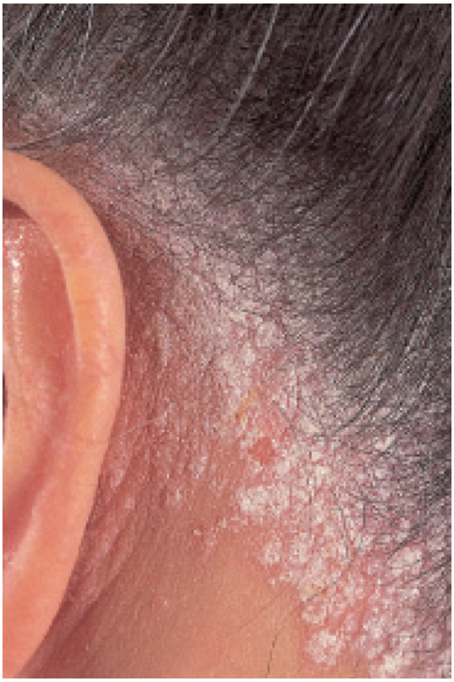

FIGURE 4.17 Scalp psoriasis. *Source:* Graham-Brown and Burns (2007). Reproduced with permission of John Wiley & Sons.

Psychological factors

In some people, the plaques are very long-standing and show little change, and in some, they come and go. With others, the skin changes worsen and spread to other parts of the body, sometimes in response to a stressful event. This is particularly distressing for the person involved who then has to cope with the stress of having a relapse of psoriasis as well as the precipitating event.

The psychological impact of having a chronic skin disorder, such as psoriasis, must not be underestimated. There is a significant stigma connected with all skin diseases. There can be a mistaken belief that the rash is contagious. People with psoriasis are reluctant to go to the gym, swim or sunbathe. There is a cultural pressure to have a perfect body as defined by the fashion industry and media. Dealing with the shedding skin scales and their appearance on clothing can also be embarrassing and stigmatising.

In these ways, psoriasis can cause loss of self-esteem, embarrassment and depression. However, each person will react differently, with some being psychologically affected by relatively minor patches, while others are untroubled by a more widespread rash. In the UK, further information and support can be accessed at `www.psoriasis-association.org.uk`.

Diagnosis

The diagnosis of psoriasis can be confusing. In the typical situation described in the earlier text, it is straightforward. In addition to affecting the extensor surfaces, psoriasis typically involves the scalp (also see the section 'Dandruff' in the earlier text of this chapter). Often the fingernails show signs of pitting, which can be a useful diagnostic sign. However, psoriasis can present with differing patterns that can be confused with other skin disorders. In guttate psoriasis, a widespread rash of small, scaly patches develops abruptly, affecting large areas of the body. This most typically occurs in children or young adults and may be triggered by a streptococcal sore throat. In general practice, the most common differential diagnosis to guttate psoriasis is pityriasis rosea. This latter condition is self-limiting and usually settles down within 8 weeks.

Psoriasis can sometimes also involve the flexor surfaces, the groin area, palms, soles and nails. The most common alternative diagnostic possibilities in these situations include eczema or fungal infections. Psoriasis of the flexural creases can be very difficult to treat and often requires input from a dermatologist.

Arthritis

For some people who have psoriasis, there is an associated painful arthritis, which most commonly affects the hands, feet, knees, neck, spine and elbows. The disease can be similar to rheumatoid arthritis, but tends to be less symmetrical. Arthritis of the fingers can cause a 'sausage-like' swelling in the fingers or toes. Sometimes only a few joints are affected in an asymmetric fashion that causes diagnostic uncertainty. There is also a variant that causes severe back pain and stiffness. There is a concern that these types of arthritis symptoms are poorly recognised in people with psoriasis and that there should be greater awareness and vigilance.

Medication

It is worthwhile enquiring about medication. Drugs such as *lithium*, beta blockers, non-steroidal anti-inflammatory drugs and antimalarials can exacerbate psoriasis.

MANAGEMENT

Management is dependent on many factors, for example, nature and severity of psoriasis, past experience, understanding the aims of the treatment, ability to apply creams and whether the person is pregnant (some treatments are teratogenic). It is particularly important to deal with the person's ideas, concerns and expectations to appreciate how the person's life is affected by the condition to give a relevant, understandable explanation and to mutually agree whether to treat or not, and, if so, how.

Topical treatments

The doctor or specialist nurse is likely to prescribe topical treatment, usually an emollient in conjunction with active therapy. Emollients are very important in psoriasis; this point may not be widely appreciated, and they may be underused. They soften the skin, reduce cracking and dryness, prevent itching and help to remove scales. There is also some evidence that they can suppress psoriasis and in many people with psoriasis should be used long term, as in eczema. The pharmacist can ask the patient when and how they are being used and emphasise their importance. They can also help the patient find an emollient that suits them best.

Calcipotriol, calcitriol or tacalcitol

Topical vitamin D preparations – *calcipotriol*, *calcitriol* or *tacalcitol* – are available as ointments, gels, scalp solutions and lotions on prescription. These products do not smell or stain, are easy to use and have become the mainstay of treatment in mild-to-moderate plaque psoriasis, as they can effectively clear the lesions. The main problem is that many people experience irritation of the skin with them; this includes burning, pruritus, oedema, peeling, dryness and redness. Excess sun sensitivity has also been reported. If overused, there is a risk of causing hypercalcaemia.

Topical corticosteroids

Topical corticosteroids alone should generally be restricted to use in the flexures or on the scalp or for small patches of localised psoriasis. They are available on prescription and should not be supplied OTC for this purpose. They can thin or remove plaques and reduce skin inflammation. An important concern is that when used alone they can destabilise the disease and this can result in a severe flare-up of psoriasis. Also an exacerbation of psoriasis is common when they are stopped. Large amounts of high-potency corticosteroids can result in severe steroid side effects (striae, skin atrophy and adrenocortical suppression). Pharmacists should be alert to patients who may be using only the corticosteroid (for example, on repeat prescription), and if they have concerns, advise the patient to attend the GP surgery.

Coal tar preparations

Coal tar preparations have been used to treat psoriasis for over 100 years and they can be reasonably effective. There are many *coal tar* preparations available and most of these can be provided OTC; these include ointments, shampoos and bath additives. Various preparations are combined with other topical treatments for psoriasis, for example, *salicylic acid*, which helps to break down keratin. There is no good trial evidence to indicate that any one is more effective than another. The choice of preparation therefore depends on licensed indications and the person's preference. Non-branded *coal tar* preparations contain crude coal tar (*coal tar British Pharmacopoeia [BP]*) and are smellier and messier to use than branded products. NICE advises the use of *coal tar* preparations for plaque psoriasis if vitamin-D-based topical therapy does not result in clearance of psoriasis or satisfactory control.

Dithranol

Dithranol has been a traditional, effective and safe treatment for psoriasis for many years and is available in proprietary creams and ointments (0.1–2.0%) that can be used for one short contact (30 min) period each day and removed using an emollient or by washing off in a bath or shower. They can be provided OTC if the *dithranol* content is 1% or less, but its use would normally be supervised by a dermatology specialist. The NICE guideline on psoriasis advises *dithranol* for treatment-resistant psoriasis. Some people are very sensitive to *dithranol*, as it can cause a quite severe skin irritation. It is usual to start with the lowest concentration and build up slowly to the strongest that can be tolerated. Users should wash their hands after application. A major drawback is that it causes a yellowy-brown stain on skin, hair, sheets and clothing; patients should be advised to wear old clothing and use old bed linen when using *dithranol*. It should not be applied to the face, flexures or genitalia. There are some people who are unable to tolerate it at all.

Note: The Cochrane review resources and NICE guidelines do not have a date as these are often updated. The most up-to-date version should be consulted.

Section	Clinical Knowledge Summaries (CKS)	NHS Health A–Z	NICE guidelines	Other resources/references
Eczema/ dermatitis	☑ Atopic eczema ☑ Dermatitis – contact	☑ Atopic eczema ☑ Contact dermatitis	Atopic eczema in under 12s: diagnosis and management, CG57	Graham-Brown, R., Harman, K. and Johnston, G. (2016). *Dermatology*, 11e. Oxford: Wiley Blackwell Weller, R.B., Hunter, H.J.A. and Mann, M.W. (2014). *Clinical Dermatology,* 5e. Chichester: Wiley Blackwell Atopic Eczema. `www.bad.org.uk` (accessed 19 February 2022)
Acne	☑ Acne vulgaris	☑	Acne vulgaris: management, NG 198	Weller, R.B., Hunter, H.J.A. and Mann, M.W. (2014). *Clinical Dermatology,* 5e. Chichester: Wiley Blackwell
Common fungal infections	☑ Fungal skin infection – foot ☑ Fungal skin infection – body and groin ☑ Fungal skin infection – scalp ☑ Fungal nail infection ☑ Candida – skin	☑ Ringworm and other fungal infections ☑ Fungal nail infections		Rotta, I., Ziegelmann, P.K. and Otuki, M.F. (2013). Efficacy of topical antifungals in the treatment of dermatophytosis: a mixed-treatment comparison meta-analysis involving 14 treatments. *JAMA Dermatol* 149: 341–349 Cochrane review: topical antifungal treatments for tinea cruris and tinea corporis

(*Continued*)

Section	Clinical Knowledge Summaries (CKS)	NHS Health A–Z	NICE guidelines	Other resources/references
Cold sores	☑ Herpes simplex – oral	Cold sores		
Warts and verrucae	☑ ☑ Molluscum contagiosum ☑ Skin cancers – recognition and referral	☑ ☑ Molluscum contagiosum	• Suspected cancer: recognition and referral, NG12	Weller, R.B., Hunter, H.J.A. and Mann, M.W. (2014). *Clinical Dermatology,* 5e. Chichester: Wiley Blackwell Graham-Brown, R., Harman, K. and Johnston, G. (2016) *Dermatology*, 11e. Oxford: Wiley Blackwell British Association of Dermatologists (2018). Plantar warts (verrucas). `www.bad.org.uk` (accessed 19 February 2022) McMillan: signs and symptoms of melanoma (2019). `www.macmillan.org.uk/cancer-information-and-support/melanoma/signs-and-symptoms-of-melanoma` (accessed 19 February 2022)

Scabies	☑	☑		Sashidharan, N.P., Basavaraj, S. and Bates, C.M. (2016). British Association for Sexual Health and HIV. Scabies Guidelines. `www.bashh.org/guidelines` (accessed 19 February 2022) Cochrane review: interventions for treating scabies
Dandruff	☑ Seborrhoeic dermatitis	☑		BMJ clinical evidence: seborrhoeic dermatitis of the scalp Graham-Brown, R., Harman, K. and Johnston, G. (2016). *Dermatology*, 11e. Oxford: Wiley Blackwell
Psoriasis	☑	☑ ☑ Psoriatic arthritis	Psoriasis: assessment and management, CG1 53	Cochrane review: skin treatments for chronic plaque psoriasis Psoriatic Arthritis: Information for patients. `https://patient.info/skin-conditions/psoriasis-leaflet/psoriatic-arthritis` (accessed 19 February 2022) Graham-Brown, R., Harman, K. and Johnston, G. (2016). *Dermatology*, 11e. Oxford: Wiley Blackwell

CHAPTER 5

Painful Conditions

MUSCULOSKELETAL PROBLEMS

Patients frequently ask for advice about muscular injuries, sprains and strains. Simple practical advice combined with topical or oral over-the-counter (OTC) treatment can be valuable. Sometimes, patients who are already taking prescribed medicines for musculoskeletal problems will ask for advice. Here, a careful assessment of adherence with prescribed medicines and the need for referral is important.

What you need to know

- Age – child, adult or older people
- Symptoms
- Pain, swelling, site and duration
- History
- Injury
- Medical conditions
- Medication
- Significance of questions and answers

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

Age

Age influences the pharmacist’s choice of treatment, but other reasons make consideration of the patient’s age important. In older people, a fall is more likely to result in a fracture; older women are particularly at risk because of osteoporosis. Referral to the local accident and emergency (A&E) department for X-rays may be the best course of action if this is a concern.

Symptoms and history

Injuries commonly occur as a result of a fall or other trauma and during physical activity, such as lifting heavy loads or taking part in sport. You should establish the details of how the injury occurred.

Sprains and strains

A sprain injury involves the overstretching of ligaments and/or the joint capsule, sometimes with tearing. The most common sprain involves the lateral ankle ligament. Referral is the best course of action, so that the clinician in the general practitioner (GP) surgery, out-of-hours service or the accident and emergency department can examine the affected area and consider whether a complete tearing of ligaments has occurred, particularly for knee and ankle injuries. With a partial tear, the joint is often swollen and the patient experiences severe pain on movement. A complete tear of a knee ligament may involve the tearing of the capsule itself. If this occurs, any blood or fluid can leak out into the surrounding tissues, so the knee may not appear swollen.

Strains are injuries where the muscle fibres are damaged by overstretching and tearing. Sometimes, the fibres within the muscle sheath are torn; sometimes, the muscle sheath itself ruptures and bleeding occurs. Strains are most common in muscles that work over two joints, for example, the hamstring. When the strain heals, fibrosis can occur, and the muscle becomes shortened. The muscle is then vulnerable to further damage.

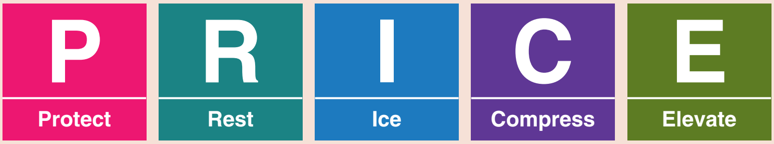
Early mobilisation, strengthening exercises and coordination exercises are all important after both sprains and strains. The return to full activity must occur gradually.

PRACTICAL POINTS

First-aid treatment of sprains and strains

The priority in treating sprains and soft-tissue injuries is to apply compression, cooling and elevation immediately, and this combination should be maintained for at least 48 h. The acronym PRICE is a useful aide memoire – see Box 5.1. The main

Box 5.1 Self-management guidance: PRICE therapy advice



Minor injuries, such as mild sprains and strains, can often be initially treated at home using PRICE therapy for 2 or 3 days.

- Protection – protect the affected area from further injury, for example, by using a support.
- Rest – avoid exercise and reduce daily physical activity. Using crutches or a walking stick may help if putting weight on the ankle or knee is painful. A sling may help for an injured shoulder.
- Ice – apply an ice pack to the affected area for 15–20 min every 2–3 h. A bag of frozen peas, or similar, will work well. Wrap the ice pack in a towel so that it does not directly touch the skin and cause an ice burn.
- Compression – use elastic compression bandages during the day to limit swelling.
- Elevation – keep the injured body part raised above the level of the heart whenever possible. This may also help reduce swelling.

To help prevent swelling, try to avoid heat (such as hot baths and heat packs), alcohol and massages for the first couple of days.

When the injured area can be moved without pain-stopping activity, try to keep moving it so the joint or muscle does not become stiff.

The patient should seek medical review after 5 days if there is:

- Lack of expected improvement (for example, difficulty walking or bearing weight).
- Worsening symptoms (such as increased pain or swelling).

aim of this treatment is to prevent swelling. If swelling is not minimised, the resulting pain and pressure will limit movement and can lead to muscle wasting in the long term or cause prolonged pain and delay recovery. Ice packs by themselves will reduce metabolic needs of the tissues, reduce blood flow and result in less tissue damage and swelling, but will not prevent haemorrhage.

Proprietary cold packs are available, but in emergencies various items have been brought into service. For example, a bag of frozen peas is an excellent cold pack for the knee or ankle because it can be easily applied and wrapped around the affected joint.

If possible, after applying a simple elastic bandage or elasticated tubular bandage, which should be snug but not tight, to help control swelling and support the injury, the affected limb should be elevated to reduce blood flow into the damaged area by the effect of gravity. This will, in turn, reduce the amount of swelling caused by oedema. Finally, the injured limb should be rested to facilitate recovery.

The application of heat can be effective in reducing pain, but only after a few days have elapsed. Heat should never be applied immediately after an injury has occurred, because heat application at the acute stage will dilate blood vessels and increase blood flow into the affected area – the opposite effect to what is needed. After the acute phase is over (1 or 2 days after the injury), heat can be useful. The application of heat can also be both comforting and effective for chronic conditions, such as back pain.

Patients can use a hot-water bottle, a proprietary heat pack or an infrared lamp on the affected area. Heat packs contain a mixture of chemicals that give off heat and the packs are disposable. Keeping the joints and muscles warm can also be helpful, and wearing warm clothing, particularly in thin layers that can retain heat, is valuable.

Muscle pain

Stiff and painful muscles may occur simply as a result of strenuous and unaccustomed work, such as gardening, decorating or exercise, and the resulting discomfort can be reduced by treatment with OTC medicines.

Bruising

Bruising as a result of injury is common and some products that minimise bruising are available OTC. The presence of bruising without apparent injury, or a description by the patient of a history of bruising more easily than usual, should alert you to the possibility of a more serious condition. Spontaneous bruising may be symptomatic of an underlying blood disorder, for example, thrombocytopaenia (lack of platelets) or leukaemia, or may result from an adverse drug reaction or other cause. If bruising is thought to be excessive or unusual, the patient should be advised to see the doctor.

Bursitis

Other musculoskeletal problems about which the pharmacy's advice might be sought include bursitis, which is the inflammation of a bursa. (This is the name given to a sac of tissue where skin moves over joints or where bones move over one another. The function of a bursa is to reduce friction during movement.) Examples of bursitis are prepatellar bursitis (housemaid's knee) and olecranon bursitis (student's elbow). Sometimes, these become infected, so if they become inflamed and hot, referral may be indicated.

Fibromyalgia

Fibromyalgia refers to chronic widespread pain affecting the muscles but not the joints. Tender spots can be discovered in the muscles and the condition can be associated with a sleep disturbance. Brain-wave studies often show a loss of deep sleep. This condition may be precipitated by psychological distress and physical trauma. The symptoms can be similar to those of chronic fatigue syndrome (also known as myalgic encephalitis or encephalomyelitis). Referral to a GP for assessment would be advisable. An empathetic approach is important, as many patients have felt rejected or that their problems have not been taken seriously by health professionals. Prescribed medication (e.g. tricyclics, non-steroidal anti-inflammatory drugs [NSAIDs] and *gabapentin*) is of limited benefit in these situations, and often 'talking therapies', such as cognitive behavioural therapy, have more to offer.

Frozen shoulder

Frozen shoulder is a common condition where the shoulder is stiff and painful. It is more prevalent in older patients. The shoulder pain sometimes radiates to the arm and is often worse at night. Patients can sometimes relate the problem to injury, exertion or exposure to cold, but frozen shoulder may occur without apparent cause. It is more common in those with diabetes. The pain and limitation of movement are usually severe and referral to the GP surgery for accurate assessment and to arrange treatment (e.g. physiotherapy) is advisable.

Painful joints

Pain arising in joints (arthralgia) may be due to arthritis, for which there are many causes. The pain may be associated with swelling, overlying inflammation, stiffness, limitation of movement and deformity of the joint.

A common cause of arthritis is osteoarthritis (OA), which is not only due to degeneration of a joint, sometimes from wear and tear, but also associated with genetic predisposition. This often affects the knees and hips, especially in the older population.

Another form of arthritis is rheumatoid arthritis (RA), which is a more generalised illness caused by the body turning its defences on itself and where there is inflammation and swelling of the synovium of joints, particularly of the hands and feet.

Other forms of arthritis can be caused by gout or infection, usually with signs of overlying inflammation and swelling. A joint infection is rare, but serious and occasionally fatal. It is often difficult to distinguish between the different causes, and it is therefore necessary to refer to the GP surgery cases where there is no previous history.

Rheumatoid arthritis

It is important to be aware of the symptoms of RA and refer quickly to the GP surgery if this condition is suspected. Unfortunately, people with RA often delay seeking medical help and delay in receiving disease-modifying anti-arthritis drugs (DMARDs) can result in permanent joint damage and disability.

RA is a common condition affecting more women than men and affecting 1% of the population. It most commonly arises in people in their thirties and forties, but sometimes appears for the first time in older people. It can come on quickly over a few days. It is often associated with systemic features, such as malaise, fatigue, fever, sweats and weight loss. Often there is a family history of the condition.

Suspect RA in anyone with tender joint swelling not associated with trauma. It typically causes symmetrical joint inflammation (synovitis) of the small joints of the hands and feet, although other joints may be affected. Clinical features of synovitis include pain, swelling and heat in affected joints that are worse at rest or during periods of inactivity. Because of swelling, the joint (not the bone) gives a 'boggy' feel on palpation and this is tender. Stiffness is most noticeable in the morning and after inactivity, and usually lasts more than 30 min. These features are distinct from those of osteoarthritis – see Figure 5.1.

People with these symptoms for the first time, and people with a past history of RA who develop these symptoms (a 'flare-up'), should be referred to the GP surgery for urgent assessment. If this diagnosis is confirmed, early use of DMARDs, along with analgesics and NSAIDs, is required.

Gout

A problem sometimes seen in the pharmacy is patients with episodes of acute gout. This is more common in older people and may affect as many as 2.5% of the population. Often, they have had this before and a GP will have diagnosed the condition and supervised treatment. It is sometimes associated with the use of diuretics, such as *bendroflumethiazide* or *indapamide*. Patients with no previous history may be alarmed by the sudden onset of symptoms, the inflammation and the pain. The most usual presentation is sudden severe pain in the metatarsal–phalangeal joint ('base') of the big toe (see Figure 5.2 in the following text), but it can be in other joints in the feet, hands, wrists, elbows or knees. The condition is caused by deposition of uric acid crystals in the joint. The joint is hot and swollen, with inflamed skin over the affected area, and is very tender. It is probably best that all

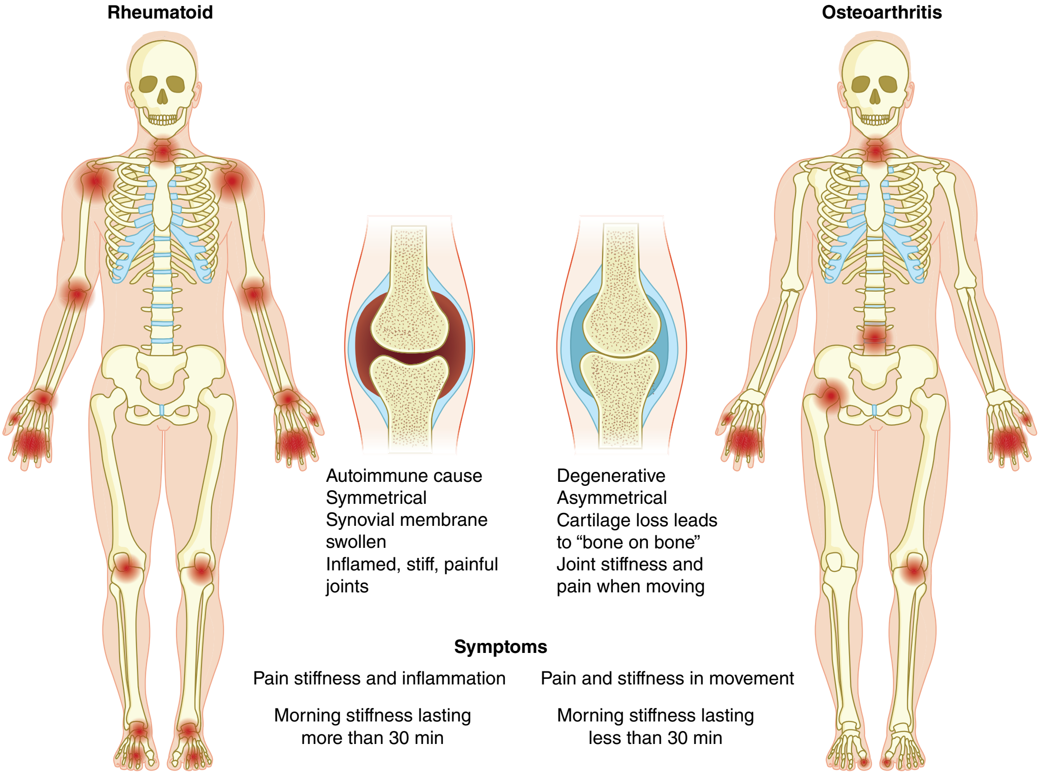

Rheumatoid
Osteoarthritis
Autoimmune cause
Symmetrical
Synovial membrane swollen
Inflamed, stiff, painful joints
Degenerative
Asymmetrical
Cartilage loss leads to "bone on bone"
Joint stiffness and pain when moving
Symptoms
Pain stiffness and inflammation
Pain and stiffness in movement
Morning stiffness lasting more than 30 min
Morning stiffness lasting less than 30 min

FIGURE 5.1 Distinguishing rheumatoid arthritis from osteoarthritis.

patients with suspected acute gout are referred to the GP surgery for assessment. It may be necessary to exclude infection as the cause. In patients who have had previous episodes, the diagnosis is clearer, and *ibuprofen* (if tolerated) is a highly effective treatment which can be used while waiting for a GP surgery appointment. Elevation and cooling with an icepack may also help. Patients with repeated episodes should be on a preventative treatment, such as *allopurinol*.

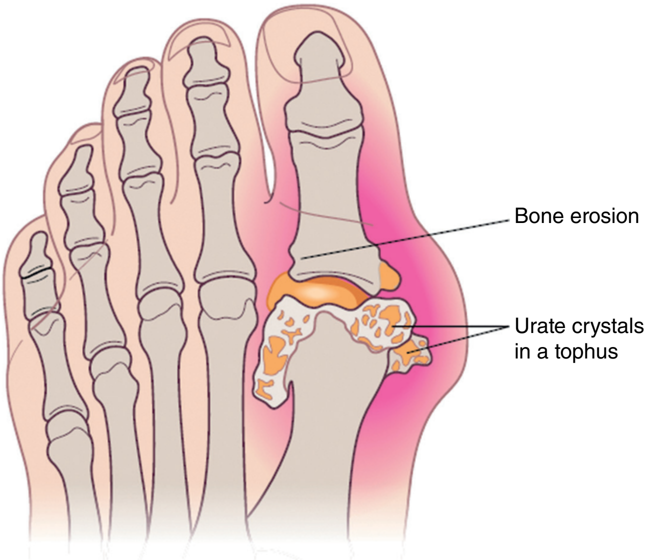


FIGURE 5.2 Typical site of gout – first metatarsal–phalangeal joint. *Source:* Figure from Page 57, *Pathophysiology for Nurses at a Glance* by Muralitharan Nair and Ian Peate. Reproduced with permission of John Wiley & Sons.

Low back pain

Lower back pain affects 60–80% of people at some stage in their lives and is often recurrent. Non-serious acute back problems need to be treated early by encouraging activity. Mobilisation, stretching and exercise are particularly important in the prevention of progression to chronic low back pain. Acute back pain is generally regarded as lasting less than 6 weeks, subacute for 6–12 weeks and chronic longer than 12 weeks. The main cause is attributed to strain of the muscles or other soft structures (e.g. ligaments and tendons) connected to the vertebrae. Sometimes, it is the cushion between the bones (intervertebral disc) that is strained and that bulges out (herniates) and presses on the nearby nerves (as in sciatica). Often back pain occurs with no obvious precipitating activity. Lower back pain that is not too severe or debilitating and has come on spontaneously or after gardening, awkward lifting or bending may be due to muscular strain (lumbago), and appropriate advice can be given in the pharmacy.

Although advocated in the past, bed rest is not recommended for simple low back pain and is to be avoided. The emphasis should be on mobilising and maintaining activity, supported by pain relief. There is good evidence that advice to stay active results in faster recovery, reduced pain, reduced disability and reduced time off work compared with advice to rest. If, having given advice of this nature, there is no improvement within 1 week, referral is advisable.

Pain that is more severe, causing difficulty with mobility or radiating from the back down one or both legs, is an indication for referral for assessment at the GP surgery. A slipped disc can press on the sciatic nerve (hence sciatica) causing pain and sometimes pins and needles and numbness in the leg.

Low back pain associated with any altered sensation in the anal or genital area, or bladder symptoms, requires urgent referral to the practice or out-of-hours service, as this suggests damage to the nerves controlling the bowels or bladder.

Back pain that is felt in the middle to upper part of the back is less common, and if it has been present for several days, it is best referred to the doctor. Kidney pain can be felt in the back, to either side of the middle part of the back just below the ribcage (loin area). If the back pain in the loin area is associated with any abnormality of passing urine (discolouration of urine, pain on passing urine or frequency), then a kidney problem is more likely.

Prevention of recurrent back pain

Good posture, lifting correctly, a good mattress and losing excess weight can help. Paying attention to posture and body awareness is important, and classes to relearn good posture may help some patients (e.g. using the Alexander technique). There is also some evidence that yoga and Pilates may reduce disability and pain in the longer term. The National Institute for Health and Care Excellence (NICE) suggests that group exercise programmes (biomechanical, aerobic, mind–body or a combination of approaches) may help and many National Health Service (NHS) physiotherapy departments run ‘back classes’ to provide these.

The additional pressure on the spine caused by excess weight may lead to structural compromise and damage (e.g. injury and sciatica), so weight loss should be advised in overweight people. The lower back is particularly vulnerable to the effects of obesity, and lack of exercise leads to poor flexibility and weak back muscles.

Repetitive strain disorder

Repetitive strain disorder covers several arm conditions, mainly affecting the forearm. Tenosynovitis is the term that has been used to refer to conditions around the wrist, which sometimes occur in computer keyboard operators. The condition presents as swelling on the back of the forearm. There may be crepitus (a creaking, grating sensation or sound) when the wrist is moved. Sometimes, the symptoms disappear on stopping the job, but they may return when the work is restarted.

Whiplash injuries

Neck pain following a car accident is common. Acute whiplash injury follows sudden or excessive bending, or rotation of the neck, and can also follow things, such as a diving injury. The symptoms usually last for a few weeks, but rarely they can last for a longer period – over 2 years in some cases. Encouraging an early return to usual activities and early mobilisation is important to speed recovery, and sometimes this needs input from physiotherapy. The use of *paracetamol* or NSAIDs, such as *ibuprofen*, may also help. In most cases, it is best to discourage rest, immobilisation and use of soft collars. If patients come to the pharmacy with whiplash injury, they should be referred to the GP surgery for assessment in the first instance, and in many cases people require a report for insurance purposes if they have been in a car accident. Those with long-term symptoms are difficult to manage, and their management often comes under the care of specialists and pain clinics. This is often associated with anxiety and depression.

Medication

Prescribed medication

People with RA, osteoarthritis or chronic back pain may be already taking analgesics or NSAIDs prescribed by their doctor. Although the recommendation of a topical analgesic is unlikely to cause problems in terms of drug interactions, if the patient is in considerable and regular pain despite prescribed medication, or the pain has become worse, referral back to the surgery might be appropriate.

Side effects of prescribed medicines: in older people, it should be remembered that injuries caused by falling, and the risk of falls, are sometimes the result of drug therapy. Medicines can cause postural hypotension, dizziness, unsteadiness or confusion as part of this risk. Any older person reporting injuries due to falling, or having had an unexplained fall, should be carefully questioned about current medication, and the pharmacist should contact the doctor if an adverse reaction is suspected or if there is a risk of further falls. This is particularly important in frail people.

Self-medication

The pharmacist should also enquire about any preparations used in self-treatment of the condition and their degree of effectiveness. It is important to avoid duplication of treatments, such as *paracetamol*.

When to refer

- Suspected fracture
- Possible adverse drug reaction: falls or bruising
- Head injury

- Whiplash injuries
- Medication failure
- Suspected arthritis or gout
- Severe or prolonged back pain
- Back pain (and/or pins and needles/numbness) radiating to leg
- Back pain in the middle/upper back (especially in the older patient)

Treatment timescale

Musculoskeletal conditions should respond to treatment within a few days. A treatment of maximum 5 days should be recommended, after which patients should see their doctor.

MANAGEMENT

In England, there is guidance to the NHS on conditions for which OTC items should not routinely be prescribed in primary care. This states that most minor conditions associated with pain, discomfort and/fever can be treated at home with OTC painkillers and lifestyle changes, such as getting more rest and drinking enough fluids. It advises that patients should be encouraged to keep a small supply of OTC analgesics in their medicine cabinets, so they can manage minor conditions without the need for a GP appointment. Examples given of these conditions include: headache, colds, fever, earache, teething, period pain, cuts, self-limiting musculoskeletal pain, sprains and strains, bruising, toothache, sinusitis/nasal congestion, recovery after a simple medical procedure, aches and pains and sore throat. In this way, they wish to reduce the GP prescribing of *paracetamol*, *ibuprofen* and topical NSAIDs both to reduce NHS costs and take the pressure off general practice. This guidance emphasises the role of pharmacists in supporting the management of these conditions and encouraging patients to self-care, where appropriate.

A wide range of OTC preparations containing systemic and topical analgesics are available for self-care. Taking the analgesic regularly is important to obtain full effect and the patient needs to know this. Topical formulations include creams, ointments, lotions, sticks and sprays.

Paracetamol

Paracetamol has analgesic and antipyretic effects, but little or no anti-inflammatory action. The exact way in which *paracetamol* exerts its analgesic effect remains unclear, despite extensive research. However, the drug can be effective in reducing both pain and fever. It is less irritating to the stomach than *aspirin* or *ibuprofen*. Recently, NICE have advised that *paracetamol* is relatively ineffective for back pain.

- The dose for an adult is 0.5–1 g every 4–6 h. The maximum dose is 4 g (eight 500 mg tablets) per day. It is important that this is not exceeded.
- For general sales, the maximum quantity that should be sold is 32 of the 500 mg strength preparations (two packs of 16).
- A pharmacy may sell larger packs containing up to 32 tablets or capsules under the supervision of a pharmacist. In some circumstances, a pharmacist can supply more. Implementation of this policy has dramatically reduced the death from overdose of *paracetamol*.
- *Paracetamol* can be given to children aged 2–3 months, depending on the product licence. Check the individual packs for doses, related to the child's age. A wide range of paediatric formulations, including sugar-free syrups and suppositories, is available. In 2011, guidance with narrower age ranges for certain doses was introduced (see the *British National Formulary* [*BNF*] or *British National Formulary for Children* [*BNF-C*]).
- *Paracetamol* is generally considered safe in pregnancy and while breastfeeding. However, in pregnancy, the lowest effective dose should still be used and the duration of use kept to a minimum.

Overdose risk – liver toxicity

At only slightly higher doses than 4 g a day, *paracetamol* can cause liver toxicity and damage may not be apparent until a few days later. All suspected overdoses of *paracetamol* – inadvertent or deliberate – should be taken seriously and the patient referred to a hospital accident and emergency department.

Paracetamol is a component of many multi-ingredient medicines sold over the counter with names that may not indicate *paracetamol* as an ingredient. It is important to help patients be aware of this and that simultaneous administration of these, together with OTC *paracetamol*, may result in inadvertent overdose.

Ibuprofen

Ibuprofen has analgesic, anti-inflammatory and antipyretic effects.

- The usual dose is 200–400 mg three times a day with food.
- For general sales, only pack sizes of up to 16 tablets/capsules can be sold – of the 200 mg equivalent dose (some salts have differing doses).
- For pharmacy sales, larger packs of tablets/capsules can be sold and the 400 mg strength can be supplied.

- The maximum dose allowable to recommend for OTC use is 1200 mg in 24 h.
- On prescription, the maximum dose is higher at 600 mg four times a day – 2400 mg in 24 h.
- OTC supply is for short-term use only.
    - In adults, without medical advice not longer than 3 days in migraine headache and fever.
    - No longer than 4 days in pain and dysmenorrhoea.
    - If symptoms persist or worsen, a doctor should be consulted.
    - If an adolescent requires this medicinal product for more than 3 days, a doctor should be consulted.
    - If symptoms worsen, a doctor should be consulted.
- If it is considered that patients have partially responded and need a higher dose, or longer treatment, referral may be indicated.
- *Ibuprofen* tablets or capsules should not be given to children under 12 years of age.
- *Ibuprofen* suspension 100 mg in 5 ml is available OTC for children.
- *Ibuprofen* suspension 200 mg in 5 ml is available OTC intended for children aged 7 years and over.
- Differences in product licences mean that some *ibuprofen* suspensions can be used in children aged 3 months and over.
- *Ibuprofen* should be avoided in pregnancy, particularly during the third trimester.
- Breastfeeding mothers may safely take *ibuprofen*, since it is excreted in only small amounts in breast milk.

Check individual product details for doses.

Indigestion and gastrointestinal (GI) ulceration

Ibuprofen, like other NSAIDs, can be irritating to the stomach, causing indigestion, nausea and diarrhoea. GI ulceration and bleeding can also occur. For these reasons, it is best to advise patients to take NSAIDs with or after food, and they should be avoided in anyone with a peptic ulcer or a history of peptic ulcer.

Bleeding

NSAIDs can increase the bleeding time due to an effect on platelets. This effect is reversible within 24 h of stopping the drug (whereas reversibility may take several days after stopping *aspirin*).

To reduce the chance of ulceration and bleeding, older patients taking an NSAID, such as *ibuprofen*, are often prescribed a proton-pump inhibitor, such as *omeprazole*, at the same time, if they are taking these drugs for more than a week or so. Older people buying and using *ibuprofen* repeatedly should be asked to consult with their GP surgery, so this can be considered.

Ibuprofen seems to have little or no effect on whole blood clotting or prothrombin time, but it is still not advised for patients taking anticoagulant medication (as bleeding risk is high) for whom *paracetamol* would be a better choice.

Renal impairment

Ibuprofen (and other NSAIDs) can also impair renal function. Elderly patients seem to be particularly prone to these effects.

Hypersensitivity

Cross-sensitivity between *aspirin* and NSAIDs occurs, so it is wise not to recommend *ibuprofen* and other NSAIDs for anyone with a previous sensitivity reaction to *aspirin*. Since asthmatic patients are more likely to have such a reaction, the use of NSAIDs in people with asthma should be with caution.

Contraindications

Sodium and water retention may be caused by *ibuprofen* and other NSAIDs, and they are therefore best avoided in patients with congestive heart failure or renal impairment.

Interactions

Ibuprofen and other NSAIDs can aggravate renal dysfunction when people are also taking angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARBs), and greater care is needed in such patients. If a diuretic is also being taken, the combination of all three can be particularly hazardous for the kidneys – the so-called triple whammy. These problems are most likely to occur at times of intercurrent illness and they can lead to acute kidney injury (AKI).

Ibuprofen (and other NSAIDs) interacts with lithium. NSAIDs inhibit prostaglandin synthesis in the kidneys and reduce lithium clearance. Serum levels of lithium are thus raised with the possibility of toxic effects. Lithium toxicity manifests itself as GI symptoms, polyuria, muscle weakness, lethargy and tremor.

Care should be taken, and *ibuprofen* is best avoided, if the patient is taking antiplatelet drugs, such as *clopidogrel* or low-dose *aspirin* (i.e. 75 mg daily). It should not be used at all if the patient is on *warfarin*.

Likewise, care is needed if the patient is on a selective serotonin reuptake inhibitor (such as *citalopram* or *fluoxetine*) or serotonin–noradrenaline reuptake inhibitor (such as *venlafaxine* or *duloxetine*), as there is an increased risk of gastrointestinal bleeding if *ibuprofen* is used.

Caution in the elderly

Adverse effects, such as GI bleeding and renal impairment, are more likely to occur in the elderly, and *paracetamol* may be a better choice in these cases.

Aspirin

Aspirin is an anti-inflammatory, analgesic drug indicated for headache, transient musculoskeletal pain, dysmenorrhoea and pyrexia.

- It is given in an OTC dose of 300–900 mg every 3–4 h as required, to a maximum of 12 tablets (3.6 g) daily.
- It is also commonly prescribed at low dose (75 mg daily) as an antiplatelet.
- For general sales, the maximum quantity that should be sold is 32 of the 300 mg strength preparations (two packs of 16).
- A pharmacy may sell larger packs containing up to 32 tablets or capsules under the supervision of a pharmacist. A pharmacist in some circumstances can supply larger quantities.

Its OTC use (other than as an antiplatelet) has diminished for several reasons:

- In inflammatory conditions, most prescribers prefer anti-inflammatory treatment with another NSAID, as these tend to be better tolerated and more convenient for most patients.
- It causes more gastric irritation than *paracetamol* or *ibuprofen*.
- As a strong antiplatelet agent, it affects blood clotting which may lead to bleeding.
- It should not be used for gout or where there is history of gout, as it will aggravate the condition.
- It should not be given to children under 16 years of age because it may cause Reye’s syndrome.
- *Aspirin* interacts significantly with a large number of drugs, such as NSAIDs, including *ibuprofen*, antiplatelet drugs, such as *clopidogrel*, selective serotonin reuptake inhibitors, such as *citalopram* or *fluoxetine*, and serotonin–noradrenaline reuptake inhibitors, such as *venlafaxine* or *duloxetine*. With these there is an increased risk of gastrointestinal bleeding.

- The interaction with *warfarin* is a special hazard and severe bleeding may occur if *aspirin* is taken.
- Likewise, *aspirin* should not be used OTC by patients taking direct acting oral anticoagulants (e.g. *apixaban, dabigatran etexilate, edoxaban*, and *rivaroxaban*).
- The local use of *aspirin*, for example, dissolving a soluble tablet near an aching tooth (a 'traditional' remedy), is best avoided, since ulceration of the gums may result.

Reports indicate that some parents are still unaware that *aspirin* is contraindicated in children. Analgesics are often purchased for family use, and it is worth reminding parents of the minimum age for the use of *aspirin*.

Indigestion

Gastric irritation (indigestion, heartburn, nausea and vomiting) is sometimes experienced by patients after taking *aspirin*, and for this reason the drug is best taken with or after food. When taken as dispersible tablets, *aspirin* may be less likely to cause gastric irritation.

Bleeding risk

Aspirin can cause GI bleeding and should not be recommended for any patient who either currently has or has a history of peptic ulcer. The risk of bleeding is higher in elderly patients.

Aspirin affects the platelets and clotting function, and it should not be recommended for toothache likely to lead to tooth extraction or for pain after tooth extraction, as this may lead to bleeding. The anti-platelet effects can last for several days after taking *aspirin*.

Alcohol

Alcohol consumption increases the irritant effect of *aspirin* on the stomach and enhances its effects on bleeding time. It is best avoided.

Pregnancy and breastfeeding

Aspirin should be avoided in pregnancy. It should not be used at all in the last trimester. It should not be taken while breastfeeding.

Hypersensitivity

Hypersensitivity to *aspirin* occurs in some people. They may experience skin reactions (rashes and urticaria) or sometimes shortness of breath, bronchospasm and even asthma attacks. It has been estimated that 4% of people with asthma have this problem and *aspirin* should usually be avoided in any patient with a history of asthma.

Codeine and dihydrocodeine

Codeine is a narcotic analgesic and is a prodrug which is metabolised by the body to *morphine* to become effective. *Dihydrocodeine* is related to *codeine* and has similar analgesic efficacy, but does not require metabolism to be effective.

Pharmacists are well aware that some patients tolerate *codeine* very poorly and become extremely nauseous on just small doses, while others may fail to get pain relief at relatively high doses. The reason for this is a wide genetic variation in how *codeine* is metabolised (see Chapter 14: 'Pharmacogenomics'). Those with very rapid metabolism (1–2% of the population) tolerate the drug poorly as they get a *morphine* 'overdose' even with small amounts. Non-opioid analgesia or even paradoxically very low-dose *morphine* (available via a doctor's prescription) may be a better, more predictable option for these *codeine* 'ultra-metabolisers'. At the other extreme, in patients who are 'poor' or 'intermediate' metabolisers (seen in as many as 5–10% of the population), the analgesic effects of *codeine* may be inadequate due to lower levels of active *morphine*.

In those patients who do not metabolise *codeine* effectively to its active metabolite *morphine*, *dihydrocodeine* may be more suitable than *codeine*.

Codeine and *dihydrocodeine* cannot be supplied OTC as single ingredients. They can only be supplied OTC as combination products with other analgesics as pharmacy medicines (P). They are not available for general sales (general sales list [GSL]). The indication is for acute moderate pain which is not considered to be relieved by other analgesics, such as *paracetamol* or *ibuprofen* alone.

- For pharmacy sales, no more than 32 tablets/capsules should be supplied at any one time.
- They should only be used in people over 12 years of age.
- For most products, the maximum dose is 8 tablets/capsules in 24 h.
- They should only be taken for up to 3 days at a time. If the pain gets worse or if needed for longer than this, the patient should seek a medical opinion.
- Patients should be advised that the treatment may be addictive if used for more than 3 days.
- *Codeine* is available in combination products with *aspirin*, *paracetamol*, or *ibuprofen*. Some combinations also contain *buclizine* or *caffeine*.
- Although *codeine* is available in doses of 8 mg in combination analgesics, such as *co-codamol* 8 mg/500 mg (16 mg per dose of two tablets), the evidence suggests that a total dose of at least 30 mg is required for analgesic effect in most people.

- *Dihydrocodeine* is available in a combination product with *paracetamol* 500 mg at a dose per tablet of 7.46 mg *dihydrocodeine*.
- Constipation is a well-recognised side effect of these drugs, even at these low doses, and is more likely in older people and others prone to constipation.
- *Codeine* and *dihydrocodeine* can cause drowsiness and respiratory depression.
- *Codeine* and *dihydrocodeine* can cause nausea and vomiting. These are common adverse effects.
- Neither *codeine* nor *dihydrocodeine* should be used by breastfeeding mothers because it can pass to the baby through breast milk and can potentially cause harm (particularly in women who are rapid metabolisers).
- Combination products containing *codeine* or *dihydrocodeine* should not be used as treatment for migraine, as they may contribute to nausea and add little analgesic benefit. Frequent use of these products for headaches and migraine is a common cause of medicines-overuse headache.

Caffeine

It has been claimed that *caffeine* increases the effectiveness of analgesics, but the evidence for this claim is not definitive. *Caffeine* is included in some combination analgesic products to enhance wakefulness and increased mental activity. It is probable that doses of at least 100 mg are needed to produce such an effect; OTC analgesics contain 30–50 mg per tablet. A cup of tea or coffee is likely to have a similar effect.

- Products containing *caffeine* are best avoided near bedtime because of their stimulant and diuretic effect.
- *Caffeine* may have an irritant effect on the stomach.
- If combined with significant dietary *caffeine* intake, the resulting higher dose of *caffeine* may increase the potential for *caffeine*-related adverse effects, such as insomnia, restlessness, anxiety, irritability, headaches, gastrointestinal disturbances and palpitations.

Topical preparations for painful conditions

There is a high placebo response to topical analgesic products. It may be that they give benefit because the act of massaging the preparation into the affected area will increase blood flow and stimulate the nerves, leading to a reduction in the sensation of pain.

Topical non-steroidal anti-inflammatory drug products

Topical gels, creams and ointments containing NSAIDs are widely used in the United Kingdom and have become very popular. Clinical trials have shown them to have some benefits in relieving musculoskeletal pain, mostly compared with placebo, but there are usually high placebo responses and the trials are small and of poor quality. There have been few comparative trials with counterirritants and rubefacients. There has been controversy about the direct analgesic effect of topical treatments, as it is unclear how they can penetrate the skin and enter body tissue or joints in sufficient concentration to give therapeutic benefit; the pharmacology makes this unlikely. One suggestion is that rubbing is largely responsible for the benefit.

Topical NSAIDs, such as *ibuprofen*, *diclofenac*, *felbinac*, and *benzydamine*, are available OTC in a large range of cream and gel formulations. Because there is some absorption (although of very small amounts), topical NSAIDs should not be used by patients who experience adverse reactions to *aspirin*, such as asthma, rhinitis or urticaria. As there is higher likelihood of *aspirin* sensitivity in patients with asthma, caution should be exercised when considering recommending a topical NSAID in those with asthma; several reports of bronchospasm have been received following the use of these products. Rarely, GI side effects have occurred, mainly dyspepsia, nausea and diarrhoea.

Counterirritants and rubefacients

Counterirritants produce mild skin irritation, and the term rubefacient refers to the reddening and warming of the skin. The theory behind their use is that they bombard the nervous system with sensations other than pain (warmth and irritation), and this is thought to distract attention from the pain felt. Massage is known to relax muscles, and it may be that the massage required to administer these products may disperse some of the chemicals that are responsible for producing pain and inflammation by increasing blood flow.

There is little published evidence on the effectiveness on counterirritants and rubefacients. This is not surprising, as many of the active ingredients and formulations have been available for many years and predate these types of scientific studies.

There are many proprietary formulations available, often incorporating a mixture of ingredients with different properties. Most pharmacists and customers have their own favourite product. For customers who live alone, a spray formulation, which does not require massage, can be recommended for areas, such as the back and shoulders, which are difficult to reach. Generally, patients can be advised to use these topical analgesic products up to four times a day, as required.

Pharmacists should be aware that GPs in England are discouraged from prescribing rubefacients, as they are on a list of products that should not routinely be prescribed. The NHS guidance is that patients should be advised to purchase them.

Methyl salicylate

Methyl salicylate is one of the most widely used counterirritants. Wintergreen is its naturally occurring form; synthetic versions are also available. A systematic review concluded that salicylates may be effective in acute pain, but that the clinical trials were not of good quality. The agent is generally used in concentrations between 10% and 60% in topical analgesic formulations.

Nicotinates

Nicotinates (e.g. *ethyl nicotinate* and *hexyl nicotinate*) are absorbed through the skin and produce reddening of the skin and an increase in blood flow and temperature. *Methyl nicotinate* is used at concentrations of 0.25–1% to produce its counterirritant and rubefacient effects. There have been occasional reports of systemic adverse effects following absorption of nicotinates, such as dizziness or feelings of faintness, which are due to a drop in blood pressure following vasodilatation. However, systemic adverse effects are rare, seem to occur only in susceptible people and are usually associated with use of the product over a large surface area.

Menthol

Menthol has a cooling effect when applied to the skin and acts as a mild counterirritant. Used in topical formulations in concentrations of up to 1%, *menthol* has antipruritic actions, but at higher concentrations, it has a counterirritant effect. When applied to the skin in a topical analgesic formulation, *menthol* gives a feeling of coolness, followed by a sensation of warmth.

Capsaicin/capsicum

The sensation of hotness from eating peppers is caused by the excitation of nerve endings in the skin, body organs and airways by a chemical called *capsaici*n. Capsicum preparations produce a feeling of warmth or ‘burning’ when applied to the skin. This is different from pain and may help create distraction from pain. They do not cause reddening because they do not act on capillary or other blood vessels. *Capsaicin* (available on prescription) has been the subject of research in clinical trials as an analgesic for post-herpetic pain and has shown some benefit. Studies in patients with arthritis have also shown some efficacy. A small amount needs to be rubbed well into the affected area. Patients should always wash their hands after use; otherwise, they may inadvertently transfer the substance to the eyes or lips, causing burning and stinging.

Heparinoid and hyaluronidase

Heparinoid and h*yaluronidase* are enzymes that may help to disperse oedematous fluid in swollen areas. A reduction in discomfort, swelling and bruising may therefore be achieved. Products containing *heparinoid* or *hyaluronidase* are used in the treatment of bruises, strains and sprains.

Irritant effect of topical preparations

- As a general rule, topical preparations should always be kept well away from the eyes, mouth and mucous membranes, and should not be applied on broken skin. Intense pain and irritant effects can occur following such contact. This is due to the ready penetration of irritant ingredients through both mucosal surfaces and direct access via the broken skin.
- When preparations are applied to thinner and more sensitive areas of the skin, irritant effects will be increased, and hence, there are restrictions on the use of these products in young children, recommended by some manufacturers. Therefore, the manufacturer's instructions and recommendations should always be checked.
- Sensitisation to counterirritants can occur; if blistering or intense irritation of the skin results after application, the patient should discontinue use of the product.

Glucosamine and chondroitin

There is some limited evidence that the 'nutriceuticals', *glucosamine sulphate* and *chondroitin*, improve the symptoms of OA in the knee and that *oral glucosamine* may have a beneficial structural effect on joints. However, the quality of much of the research is poor and disputed. The 2014 NICE guideline on osteoarthritis (updated in 2020) advises, 'Do not offer *glucosamine* or *chondroitin* products for the management of osteoarthritis'.

Adverse effects are uncommon, but include abdominal discomfort and tenderness, heartburn, diarrhoea and nausea.

There is insufficient information about pharmaceutical quality and actual content of *glucosamine* to enable pharmacists to make informed choices between available products. Some are produced from natural sources (the shells of crabs and other crustaceans), while others are synthesised from glutamic acid and glucose.

Acupuncture

Acupuncture has been used for many years for a variety of painful musculoskeletal conditions, including osteoarthritis and lower back pain. The evidence from clinical trials is difficult to interpret, as there is a strong placebo effect and it is difficult to 'blind' treatments within control arms of clinical trials for comparison (sometimes 'sham acupuncture' is used). NICE says acupuncture should not be offered for osteoarthritis or for low back pain. Acupuncture is usually not provided on the NHS and patients may have to pay for this treatment, if they wish to try it.

MUSCULOSKELETAL PROBLEMS IN PRACTICE

Patient perspective

I went to the pharmacy the other day as I tripped over a kerb and twisted my ankle. I was busy talking on my mobile phone and had not looked where I was going. My ankle was very painful, although I was able to hobble about on it, and the outer part rapidly became swollen. I did not think it was bad enough to warrant a trip to A&E. The pharmacist took a look at me. She asked me questions about how I had come to fall over (I was not drunk!) and what medicines I was taking, but I'm quite healthy and do not get prescriptions. Her view was that my injury was a sprained ankle and it was unlikely that a bone was broken. She gave me advice and an information sheet on 'sprains and strains' called PRICE. She suggested I should take *paracetamol* for the pain. I hobbled home and rested my ankle by putting it up on a pillow on a footstool. I initially used a pack of frozen peas wrapped in a tea towel to cool it down as I had these in the freezer. This was recommended by the pharmacist to use 'in emergency'. After that I used special mouldable ice packs I got from the pharmacy, every few hours, once they had been frozen. It was rather nice to be given a valid excuse to relax and watch TV for a couple of days, and the *paracetamol* and rest took away the pain. The pharmacist told me if it was not any better after a few days, or getting worse, I might need to go to A&E. After 2 days, I was able to walk much more comfortably and the swelling was much less, although my ankle looked black and blue. I've got a stout pair of walking boots that gives me support, so I'm now back at work. I'm really pleased the pharmacist helped me and that this stopped me bothering my GP or the hospital.

Case 1

Charan Gogna, a regular customer in his late twenties, comes into your pharmacy. He asks what you would recommend for a painful lower back following his weekend football game; he thinks he must have pulled a muscle and says he has had similar problems before. On questioning, you find out that he has neither taken any painkillers nor used any treatment. He is not taking any other medicines.

The pharmacist's view

Mr Gogna could take an oral analgesic regularly for a few days until the acute discomfort subsides. A topical analgesic could also be useful if gently massaged into the affected area. Since the back is hard to reach, a spray formulation might be easier than a rub. Evidence shows that bed rest does not speed up recovery and may cause more harm than good, so Mr Gogna should be advised to continue his usual daily routine. Stretching exercises may help, if not too painful.

The doctor's view

This is a very common story. His low back pain should settle in a few days. As he has had recurrent bouts of pain, he could be reviewed by a sports physiotherapist (if he has access to one) or at his GP surgery. A more detailed history of his problem describing his occupation may be useful with an examination of his back. His posture and way of moving might be less than ideal (for example, lifting things at work), and this might be putting him at risk of future problems. Consideration should be given to means of preventing further events. Doing regular exercise alongside stretches can also help keep the back strong and healthy. Activities such as walking, swimming, yoga and Pilates are popular choices as well as his football. The Alexander technique may be useful for posture. Physiotherapists and osteopaths can help with this or he could attend an NHS 'back class'.

Case 2

A middle-aged man comes into your shop. He is wearing a tracksuit and training shoes and asks what you can recommend for an aching back. On questioning, you find out that the product is, in fact, required for his wife, who was doing some gardening yesterday because the weather was fine and who now feels stiff and aching. The pain is in the lower back and is worse on movement. His wife is not taking any medicines on a regular basis, but took two *paracetamol* tablets last night, which helped to reduce the pain.

The pharmacist's view

In this case, it would have been very easy for the pharmacist to assume that the man in the shop was the patient, whereas, in fact, he was making a request on his wife's behalf. This emphasises the importance of establishing the identity of the patient. The history described is of a common problem: muscle stiffness following unaccustomed or strenuous activity – in this case, gardening. The pharmacist might recommend a combination of systemic and topical therapy. If there were an adequate supply of *paracetamol* tablets at home, the woman could continue to take a maximum of two tablets four times daily until the pain resolved. Alternatively, an oral or topical NSAID or a topical rub or spray containing counterirritants could be advised. The woman should see her doctor if the symptoms have not improved within 5 days.

The doctor's view

The story is suggestive of simple muscle strain, which should settle with the pharmacist's advice within a few days. It would be helpful to enquire whether or not she has had backaches before and, if so, what happened. It would also be worth checking that she did not have pain or pins and needles radiating down her legs. If these symptoms were present, then this might suggest a slipped disc and referral to her GP surgery would be advisable for assessment. However, pain or nerve symptoms down the leg can also occur as a result of muscle spasm with associated nerve root irritation and often resolve quickly. Keeping active despite the pain and stiffness is important advice to speed recovery.

Although *paracetamol* is no longer recommended for low back pain by NICE this patient feels they have benefited from it and there is no harm in continuing its use for a few days. If it had been ineffective then oral *ibuprofen* should be considered.

Case 3

An elderly female customer who regularly visits your pharmacy asks what would be the best thing for 'rheumatic' pain, which is worse now that the weather is getting colder. The pain is in the joints, particularly of the fingers and knees. On further questioning, you find out that she has suffered from this problem for some years and that she sees her doctor quite regularly about this, along with a variety of other complaints. On checking your patient medication records, you find that she is taking five different medicines a day. Her regular medication includes a combination diuretic preparation, sleeping tablets and analgesics for her arthritis (*co-dydramol* plus an NSAID). The joint pains seem to have become worse during the recent spell of bad weather.

The pharmacist's view

It would be best for this customer to see her doctor or practice nurse. She is already taking several medicines, including analgesics for arthritis. It would therefore be inappropriate for the pharmacist to consider recommendation of a further systemic anti-inflammatory or analgesic because of the possibilities of interaction or duplication. Indeed, the recent worsening of the symptoms indicates that consultation at the practice would be wise. Perhaps this woman is not taking all her medicines as intended; the pharmacist could explore any such problems with her before referring her back to the surgery.

The doctor's view

Referral to the doctor is advisable. She may have OA, RA or even some other form of arthritis, and the doctor would be in the best position to advise further treatment. The GP is already likely to have made an assessment of her joint pains. OA most commonly affects the end joints of the fingers, whereas RA affects the other small joints of the fingers and knuckles; tenderness on squeezing these joints is a useful test for this condition. Knees can be affected by both OA and RA, whereas in the case of the hip, OA is most common. A feature of RA is morning joint stiffness. Blood tests and X-rays can assist the diagnosis. An appointment with the GP would also give an opportunity to review her medication. As suggested, she may not have been taking her medicines regularly. It would be helpful to find out whether she is experiencing adverse effects and to renegotiate her treatment.

HEADACHE

Headache is a common symptom. The most frequent types of headache seen in the pharmacy are tension headache and migraine. Headache symptoms are also commonly seen with sinusitis. Another type of headache that pharmacists should be wary of are those related to medication overuse. Careful questioning can distinguish causes that are potentially more serious, so that referral to the doctor can be advised.

What you need to know

Age – adult or child
Duration
Nature and site of pain
Frequency and timing
Previous history
    Fits, faints, blackouts and migraine
Associated symptoms
    Nausea, vomiting and photophobia

Precipitating factors
    Foods, alcohol, stress and hormonal
Recent trauma or injury
Falls
Recent eye test
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

You would be well advised to refer any child with a headache to the GP surgery or out-of-hours service, especially if there is an associated history of injury or trauma to the head, for example, from a fall. Children with severe pain across the back of the head and neck rigidity should be referred immediately. Elderly patients sometimes suffer a headache a few days after a fall involving a bang to the head. Such cases may be the result of a slow bleed into the brain, causing a subdural haematoma (see Figure 5.4), and require immediate referral.

It is unusual for patients to present with their first migraine episode over the age of 40 years, and these patients should be referred. The mean age of onset of migraine in women is 18 years and in men it is 14 years. Prevalence of migraine rises through early adult life and declines in the late forties and early fifties.

Duration

Any headache that does not respond to over-the-counter (OTC) analgesics within a day requires referral.

Nature and site of pain

Tension headaches are the most common form. The pain is often described as being around the base of the skull and the upper part of the neck and is the same on both sides. Sometimes, the pain extends up and over the top of the head to above the eyes (see Figure 5.3). It is not associated with any neck stiffness. The muscles at the back of the neck and head can feel tender to touch. The pain may be described as like a band around the head. The pain is usually of a dull nature rather than the pounding or throbbing sensation associated with migraine. However, the nature of the pain alone is not sufficient evidence on which to decide whether the headache is likely to be from a minor or more serious cause.

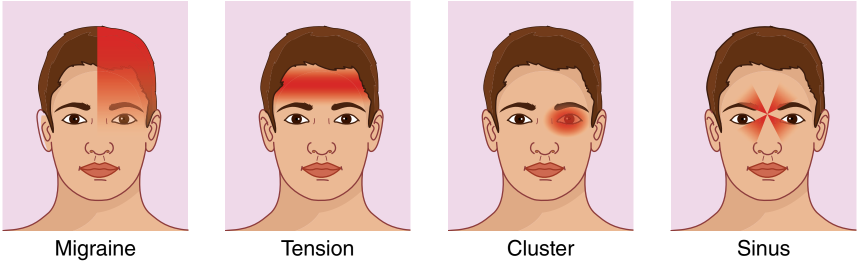


FIGURE 5.3 Common patterns of headache.

A steady, dull pain that is deep seated, severe and aggravated by lying down requires referral, since it may be due to raised intracranial pressure from a brain tumour, infection or other cause. This is rare and usually there would be other associated symptoms, such as altered consciousness, unsteadiness, poor coordination and, in the case of an infection, a raised temperature.

Migraine with aura (classic migraine) is usually unilateral, affecting one side of the head, especially over the forehead (see Figure 5.3).

Rarely, a sudden severe pain with a rapid time to peak headache intensity (i.e. from a few seconds to 5 min) may signify a subarachnoid or intracranial haemorrhage. If these are suspected, emergency medical referral is essential (see later).

Sometimes, sudden headaches are related to exercise (exertional headaches) or to sexual intercourse (‘coital cephalalgia’). These are not dangerous, but may need differentiation from haemorrhagic ones by hospital investigations.

Frequency and timing of symptoms

You should regard a headache that is worse in the morning and improves during the day as potentially serious, since this may be a sign of raised intracranial pressure. Cluster headaches, another type of headache, typically happen daily (at roughly the same time of day or night) for 2–3 months and each episode of pain can last up to 3 h (see the sub-heading ‘Cluster headaches (previously called migrainous neuralgia)’ provided in the following text). A person who has headaches of increasing frequency or severity should be referred.

Previous history

It is always reassuring to know that the headache experienced is the usual type for that person. In other words, it has similar characteristics in nature and site, but not necessarily in severity to headaches experienced over previous years. This fact makes it much less likely to be from a serious cause, whereas new or different headaches (especially in people over 45 years of age) may be a warning sign of a more serious condition. Migraine patients typically suffer from recurrent episodes of headaches. In some cases, the headaches occur in clusters. The pain may be present daily for 2–3 weeks and then be absent for months or years.

Associated symptoms

Children and adults with unsteadiness and clumsiness associated with a headache should be referred immediately.

Types of headache

Migraine

Migraine is commonly seen, and a survey of over 4000 people in England showed that 7.6% of males and 18.3% of females had experienced migraine of some type within the last year. There are two common types of migraine: migraine without aura (previously known as common migraine), which occurs in 75% cases, and migraine with aura (previously known as classic migraine).

Migraine with aura is often associated with alterations in vision before an attack starts, the so-called prodromal phase. Patients may describe seeing flashing lights or zigzag lines (photopsia). During the prodromal phase, patients may also experience tingling or numbness on one side of the body, in the lips, fingers, face or hands and occasionally have difficulty in speaking (dysphasia). The prodromal phase rarely lasts more than an hour and the headache follows.

In migraine without aura, there is no prodromal phase (no aura).

All types of migraines are commonly associated with nausea and sometimes vomiting. The headache in migraine is often severe and pulsating in nature and aggravated by physical activity. Patients often get relief from lying in a darkened room and say that bright light hurts their eyes during an attack of migraine. The headache can last for several hours; rarely it lasts for up to 72 h.

Migraine with aura is three times more common in women than in men, and this is thought to be due to oestrogen, as migraine occurring 1–2 days before and up to 3 days after menstruation is common. Women who get migraine with aura, or severe migraine without aura, should not take the combined contraceptive pill, patch or ring because of an increased risk of stroke. If a woman on combined contraception develops a severe prolonged headache or develops migraine, the hormonal contraception should be stopped, and the patient should be assessed at a GP surgery or sexual health/family-planning clinic urgently.

International Headache Society's diagnostic pointers for migraine

Migraine without aura (common migraine)

Headache attacks lasting 4–72 h (untreated or unsuccessfully treated). Headache has at least two of the following four characteristics:

1. Unilateral location
2. Pulsating quality
3. Moderate or severe pain intensity
4. Aggravation by, or causing avoidance of, routine physical activity (e.g. walking or climbing stairs)

During headache at least one of the following symptoms:

1. Nausea and/or vomiting
2. Photophobia (aversion to light) and phonophobia (aversion to noise)

Migraine with aura (classic migraine)

One or more of the following fully reversible aura symptoms:

1. Visual
2. Sensory
3. Speech and/or language
4. Motor
5. Brainstem
6. Retinal

At least two of the following four characteristics:

1. At least one aura symptom spreads gradually over ≥5 min, and/or two or more symptoms occur in succession
2. Each individual aura symptom lasts 5–60 min
3. At least one aura symptom is unilateral
4. The aura is accompanied, or followed within 60 min, by headache

Source: Adapted from The International Classification of Headache Disorders, 3rd edition, 2018. `https://www.ichd-3.org/` (Accessed 20 February 2022).

Tension-type headache

The most common type of headache is episodes of tension-type headache, and it is estimated that frequent tension headaches affect a third of adults at some point; they are also common in children. These headaches are most often related to upset or stress. They are characterised by recurrent episodes of headache that are usually bilateral and have a pressing or tightening quality (non-pulsating) that is mild to moderate in intensity. The pain is often felt to arise from the neck and is sometimes associated with musculoskeletal neck problems. Important features that help in differentiation from more serious problems are that the headache is not aggravated by routine physical activity, such as walking or climbing stairs, and is not associated with nausea or vomiting or photophobia or phonophobia (but stressed people may find that incessant noise or flashing light stresses them further).

Chronic tension-type headache and chronic daily headache

Some types of 'benign' headache can occur frequently and can be very troublesome. The term chronic tension-type headache is used if the headache occurs on 15 days or more per month, on average, and lasts for more than 3 months at a time. A variant of this is chronic daily headache (CDH) that can be daily and unremitting. These types of headache are usually seen in adults (mean age of 40 years), but they are also sometimes seen in children and in the very old. In some cases, it is possible that frequent use of simple analgesics, migraine treatments or combinations containing *codeine* are causing or aggravating chronic headache. Any frequent headache needs referral to the GP surgery for assessment. They are difficult to treat and opioids should be avoided. NICE advises that a course of acupuncture for prophylactic treatment of chronic tension-type headache can be considered.

Medication-overuse headache

It is important to recognise medication-overuse headache because people rarely respond to treatment while overusing acute medications and the condition will be perpetuated. Medication-overuse headache is a chronic headache (occurring on more than 15 days each month) that develops or worsens with frequent use of any drug treatment for pain in people who have tension-type headache or migraine. It has also been identified in people taking analgesics for other painful conditions.

It is most commonly seen when triptans, opioids, ergots or combination analgesia have been taken for 10 days per month or more, and is sometimes seen if *paracetamol*, *aspirin* or a NSAID, either alone or in any combination, is taken on 15 days per month or more. The symptoms resemble chronic tension-type headache, or chronic migraine in people who get migraine. The main treatment is stopping the analgesia, in tandem with careful support and encouragement. It may take 2 months to resolve, although the 'original' headache may still occur. If it occurs in people with migraine, an alternative to frequent analgesia might be migraine prophylaxis. If medication-overuse headache is suspected, it is important to determine what medication has been taken for headaches, in what dose and with what frequency, particularly in those regularly purchasing OTC products. If the diagnosis seems likely, the patient should be advised to discuss the problem at the GP surgery.

The NICE guideline (CG150) 'Headaches: diagnosis and management of headaches in young people and adults' states

> *Advise people to stop taking all overused acute headache medications for at least one month and to stop abruptly rather than gradually. Advise people that headache symptoms are likely to get worse in the short term before they improve and that there may be associated withdrawal symptoms, and provide them with close follow-up and support according to their needs.*

Cluster headaches (previously called migrainous neuralgia)

Cluster headaches involve, as their name suggests, a number of headaches one after the other. A typical pattern would be daily episodes of pain over 2–3 months, after which there is a remission for anything up to 2 years. The pain can be excruciating and often comes on very quickly. In typical cases, the headache commonly wakes the person within 2 h of going to sleep, but may also occur at other times. Each episode of pain can last from 15 min to 3 h. The pain is usually experienced on one side of the head, localised to an eye, cheek or temple. A cluster headache is often accompanied by a painful, watering eye and a watering or blocked nostril on the same side as the pain. Any recurrent, persistent or severe headache of this type needs referral to the GP surgery for diagnosis and management.

Sinusitis

Sinusitis may complicate a respiratory viral infection (e.g. cold) or allergy (e.g. hay fever), which causes inflammation and swelling of the mucosal lining of the sinuses (see Chapter 1: Respiratory Problems: Symptoms: Facial pain/Frontal headache). The increased mucus produced within the sinus cannot drain, and pressure builds up, causing pain. Rarely a secondary bacterial infection can complicate the problem. The pain may be felt behind and around the eye, or over the cheek, with radiation over the forehead and often only one side is affected. The headache may be associated with runny nose or nasal congestion. The affected sinus often feels tender when pressure is applied. It is typically worse on bending forwards or lying down.

Temporal arteritis

Temporal arteritis (also known as giant cell arteritis) most commonly occurs in older people (over the age of 60) when the arteries that run through the temples become inflamed. The arteries may appear red and are painful and thickened to the touch.

However, only about a half of patients have scalp tenderness, and these signs are not always present. It is a condition closely related to polymyalgia rheumatica, where inflammation of arteries causes both upper arms to be stiff and ache with associated tenderness of the thighs and pelvic area; it is useful to check for these symptoms if temporal arteritis is suspected. It is also often associated with a general feeling of being unwell (and sometimes with fever, fatigue, anorexia, weight loss and depression).

Any older person presenting with a frontal or temporal headache that is persistent should be referred immediately, as damage to the retinal blood supply can cause blindness. Sometimes, vision disturbance is an early sign. As mentioned earlier, upper arm or thigh symptoms may also be a pointer. Temporal arteritis is a curable disease, and blindness preventable, so it is important to avoid delay in diagnosis and treatment. Treatment usually involves high-dose oral corticosteroids and is highly effective, provided the diagnosis is made sufficiently early.

Other, rarer often serious types of headache to look out for

Infections can cause headache. Headache is commonly associated with colds and influenza, and now coronavirus disease (COVID-19). Severe headache is a feature of meningitis and this may be associated with photophobia, nausea and neck stiffness; usually, patients are feverish, shivery and obviously unwell. If meningitis is suspected, urgent referral is needed.

Although brain haemorrhage or brain tumours are rare, sometimes they need to be considered. The main types of brain haemorrhage causing headache are a subarachnoid haemorrhage caused by bleeding blood vessels around the brain and intracranial haemorrhage with bleeding within the brain (haemorrhagic stroke). There are usually no warning signs, but these sometimes happen during physical effort or straining, such as coughing, going to the toilet, lifting something heavy or having sex. The main symptoms of brain haemorrhage include a sudden severe headache (sometimes described as a ‘thunderclap’), a stiff neck and nausea. Vision may be affected and there may be stroke-like symptoms with slurred speech and weakness on one side of the body. If suspected, urgent referral is indicated.

Another type of bleeding around the brain occurs following trauma and is called subdural haematoma. This can develop soon after a severe head injury, or gradually over days or weeks after a more minor head injury. This type is most common in older people, particularly those on anticoagulants. Symptoms of a subdural haematoma result from raised pressure in the skull (the intracranial pressure) and can include a slowly worsening headache, nausea and confusion and sometimes altered behaviour. In older patients with recent onset confusion or behaviour change, it is important to determine if there is a history of a fall or head injury, as a subdural haematoma may be responsible for the symptoms, and the condition needs urgent treatment (surgical drainage). A related type of brain haemorrhage is

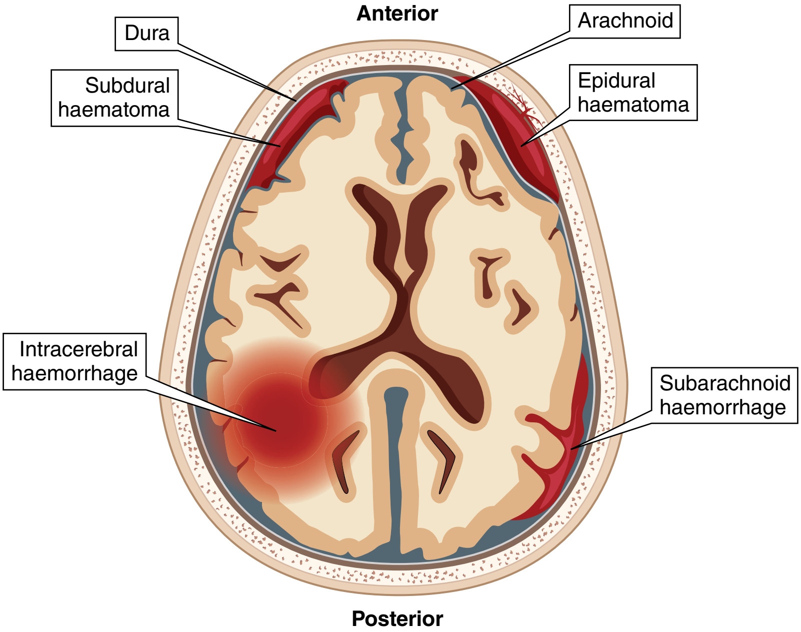


FIGURE 5.4 Illustration of the four common types of brain haemorrhage.

an epidural haemorrhage which occurs as a result of skull injury. See Figure 5.4 for an illustration of the four common types of brain haemorrhage.

Very rarely brain tumours may be the cause of headache. As the tumour grows and occupies space in the skull, symptoms of increased intracranial pressure include persistent headaches which are characteristically worse in the morning (for example, on waking) or when bending over or coughing. Other symptoms of a brain tumour vary depending on the exact part of the brain affected, but include seizures (fits), nausea, vomiting and drowsiness. As with subdural haematoma, behavioural changes, confusion or changes in personality are sometimes seen. If a brain tumour is suspected, urgent referral is required.

Precipitating factors

Stress

Tension headache and migraines are often precipitated by stress, for example, pressure at work or a family argument. Some migraine sufferers experience their attacks when relaxing after a period of stress, for example, when on holiday or at weekends (so-called weekend migraine). Certain foods precipitate migraine attacks in some people, for example, chocolate and cheese. Migraine headaches may also be triggered by hormonal changes. Migraine attacks may be associated with the menstrual cycle or with combined hormonal contraception (pill, patch or ring) (see the section ‘Migraine’ in the earlier text).

Recent trauma or injury

Any patient with a severe or persistent headache associated with a head injury should be referred to the doctor or accident and emergency department immediately because bruising or haemorrhage may occur, causing a rise in intracranial pressure. The pharmacist should look out for drowsiness or any sign of impaired consciousness. Persistent vomiting after the injury is also a sign of raised intracranial pressure.

Eyesight problems

Headaches associated with periods of reading, writing or other close work may be due to deteriorating vision, particularly near vision loss of focus seen in middle-age (presbyopia), and a sight test may be worth recommending to see whether spectacles are needed.

Although rare, a serious cause of headache to watch out for is acute glaucoma caused by a sudden increase in intraocular pressure. This condition causes severe headache and eye pain, associated with blurred vision often with halos around lights, and with nausea. The eye may be red and the cornea hazy in appearance, although this is not always the case. It is more common in old age and in women, occasionally in older people headache is the main presenting symptom (see Chapter 9: Eye and Ear Problems: Glaucoma). If suspected, urgent referral is required, as if left untreated, blindness occurs.

Medication

The nature of any prescribed medication should be established, since the headache might be a side effect of medication, for example, nitrates used in the treatment of angina. Headaches can occur because of medication overuse (see the section ‘Medication-overuse headache’ in the earlier text). It is therefore important to determine what medication has been taken for headaches, in what dose and with what frequency.

Other things to consider

Any woman taking the combined hormonal contraception (pill, patch or ring) and reporting severe prolonged headache or migraine headaches, either for the first time or as an exacerbation of existing migraine, should be referred to the GP surgery or sexual health/family-planning clinic urgently, since this may be an early warning of cerebrovascular abnormality with risk of stroke. The contraception should be stopped until the cause of the headache has been determined.

Occasionally, a headache is caused by hypertension, but, contrary to popular opinion, such headaches are not common and occur only when the blood pressure is extremely high. In drug interactions that lead to a rise in blood pressure, for example, between a sympathomimetic drug, such as pseudoephedrine, and a monoamine oxidase inhibitor (rarely prescribed these days), a headache is likely to occur as a symptom.

The patient may already be taking a NSAID or other analgesic on prescription and duplication of treatments should be avoided, since toxicity may result. If OTC treatment has already been tried without improvement, referral is advisable.

Excess alcohol either as a 'hangover' or over a prolonged period of time may cause headaches. This may not be volunteered as a possible cause by the patient and sometimes tactful enquiries are required, if suspected.

When to refer

- Headache associated with injury/trauma
- Sudden-onset severe headache
- Headache associated with high temperature (>38 °C)
- Severe headache of more than 4 h duration
- Suspected adverse drug reaction
- Headache in children under 12 years of age
- New onset headache in a person aged over 50 years
- Headache where acute glaucoma is suspected
- Headache that is worse in the morning (such as on waking) and then improves
- Associated with drowsiness, unsteadiness, visual disturbances, vomiting or photophobia
- Neck stiffness
- Frequent migraines suggesting need for prophylactic treatment
- Frequent and persistent headaches

Treatment timescale

Treatment timescale depends on the nature of the headache and likely cause.

MANAGEMENT

The pharmacy choice of oral analgesic comprises three main agents: *paracetamol*, *ibuprofen* and *aspirin*. *Aspirin* is now rarely used for analgesia and should not be used at all in children under the age of 16 years. These medications may be combined with other constituents, such as *codeine*, *dihydrocodeine*, *doxylamine* and caffeine. See earlier in this chapter for information on, and supply of, these drugs. OTC analgesics are available in a variety of dosage forms, and, in addition to traditional tablets and capsules, syrups, soluble tablets and sustained release dosage forms are available for some products. Other combination therapies may sometimes be useful, for example, an analgesic and decongestant (systemic or topical) in sinusitis.

The peak blood levels of analgesics are usually achieved 30 min after taking syrups or dispersible dosage forms and within an hour with traditional tablets; however, after traditional *aspirin* tablets, it may take up to 2 h for peak levels to be reached. The timing of the doses of drugs is important in migraine, as the analgesic should be taken at the first sign of a headache, preferably in soluble form, since gastrointestinal (GI) motility is slowed during an attack and absorption of analgesics delayed.

A buccal preparation of *prochlorperazine* is available for OTC supply, only by a pharmacist (a P drug), specifically for nausea and vomiting in migraine in people aged 18 years or over. It should not be supplied for other causes of nausea and vomiting. See Prochlorperazine (buccal preparation), later in this section.

Sumatriptan

Sumatriptan 50 mg tablets can be supplied OTC, only by a pharmacist. Usually, a trial of *paracetamol* or *ibuprofen* will have been attempted for previous episodes of migraine before *sumatriptan* is considered. However, NICE guidance recommends that a combination of a triptan drug with NSAID or *paracetamol* is now considered the most effective first-line therapy. NICE further advises that some patients will wish to have a single drug, and this can be an NSAID, *paracetamol* or triptan depending on preference.

Sumatriptan can be used OTC for acute relief of migraine with or without aura and where there is a ‘clear diagnosis of migraine’:

- It can be used by people aged between 18 and 65 years.
- A 50-mg tablet is taken as soon as possible after the migraine headache starts.
- A second dose can be taken at least 2 h after the first if symptoms come back.
- No more than two 50 mg tablets (total dose 100 mg) may be taken in any 24-h period or to treat the same attack.
- A second dose should be taken only if the headache responded to the first dose.
- It can be used with either *paracetamol* or *ibuprofen* to give a greater benefit.

Practice guidance from the Royal Pharmaceutical Society (RPS) says that if the patient has previously received *sumatriptan* on prescription and the pharmacy holds their patient medication record, then OTC supplies can be made, provided there has been no change in the condition. If the person has not used *sumatriptan* before, the pharmacist needs to determine their suitability for the treatment. They must have an established pattern of migraine, and the pharmacist needs to identify any other symptoms or relevant medical conditions as well as any other medication being taken.

Referral to the GP surgery

Many patients with migraine often suffer from extreme nausea, and sometimes vomiting, despite the use of analgesics or *sumatriptan*. If OTC buccal *prochlorperazine* is insufficient, or considered inappropriate, it is best to refer the patient to the GP for consideration of other antiemetic treatment options. *Metoclopramide* is sometimes prescribed.

Another thing to consider in patients with migraine is whether preventative treatment is required. The main criteria for this is if migraine attacks are having a significant impact on quality of life and daily function, for example, they occur frequently (more than once a week on average) or if the person is at risk of medication-overuse headache due to frequent use of acute drugs. *Propranolol*, *topiramate* and *amitriptyline* are most frequently used for this purpose.

Pregnant or breastfeeding migraine sufferers should be referred to the surgery. There is limited experience of using triptans during pregnancy. It is recommended that this is avoided unless the potential benefit outweighs risk. *Sumatriptan* is present in breast milk, but the amount is probably too small to be harmful. It is recommended that infant exposure is minimised by avoiding breastfeeding for 12 h after treatment, during which time any breast milk expressed should be discarded.

The following patients should also be referred for medical assessment:

- Those aged under 18 years or over 65 years.
- Those aged 50 years or over and experiencing migraine attacks for the first time. If a doctor confirms a diagnosis of migraine, they can be considered for OTC *sumatriptan*.
- Patients who had their first ever migraine attack within the previous 12 months.
- Patients who have had fewer than five migraine attacks in the past.
- Patients who experience four or more attacks per month. The patient is potentially suitable for OTC *sumatriptan*, but should be referred to a doctor for further evaluation and management.
- If migraine headache lasts for longer than 24 h, the patient is potentially suitable for OTC *sumatriptan*, but should be referred to a doctor for further evaluation and management.

- Patients who do not respond to treatment.
- Patients who have a headache (of any type) on 10 or more days per month.
- Women who develop migraine and take the combined hormonal contraception pill, patch or ring have an increased risk of stroke, so should be referred, and advised to stop the hormonal contraception.
- Patients who do not recover fully between attacks.
- Patients with three or more cardiovascular risk factors.

List adapted from Practice Guidance – OTC Sumatriptan. RPSGB, 2006.

Cautions

People with three or more of the following cardiovascular risk factors are not suitable for OTC *sumatriptan*:

- Men aged over 40 years.
- Post-menopausal women.
- People with hypercholesterolaemia.
- Regular smokers (10 cigarettes or more daily).
- Obese people with body mass index of more than 30 kg/m^2.
- Those with diabetes; or those with a family history of early heart disease – either father or brother had a heart attack or angina before the age of 55 years or mother or sister had a heart attack or angina before the age of 65 years.

Contraindications

OTC *sumatriptan* must not be used prophylactically and not in people with known hypertension, previous myocardial infarction, ischaemic heart disease, peripheral vascular disease, coronary vasospasm/Prinzmetal's angina, cardiac arrhythmias (including Wolff–Parkinson–White syndrome), hepatic or renal impairment, epilepsy, a history of seizures and cerebrovascular accident or transient ischaemic attack.

Adverse effects

Common adverse effects include nausea and vomiting, disturbances of sensation (including tingling), dizziness, drowsiness, flushing, warm sensation, feeling of weakness, fatigue and heaviness and pain or pressure in any part of the body.

Interactions

These include monoamine oxidase inhibitors (either current or within the last 2 weeks) and ergot, but these are now rarely prescribed. *St John's wort* may increase serotonin levels and cause 'serotonin syndrome'. An interaction between *sumatriptan* and selective serotonin reuptake inhibitors (such as *citalopram* or *fluoxetine*) or serotonin noradrenaline reuptake inhibitors (such as *venlafaxine* or *duloxetine*) may occur, also causing 'serotonin syndrome'.

Prochlorperazine (buccal preparation)

A buccal preparation of *prochlorperazine* can be supplied by a pharmacist (it is a P drug) for nausea and vomiting associated with migraine; it is not a treatment for migraine. It can only be provided where migraine has previously been diagnosed by a doctor, to patients over the age of 18 years. Patients should be advised to place it high up along the top gum under the upper lip, until dissolved. The tablet should not be chewed or swallowed. The dose is one or two 3 mg tablets, once or twice a day. The main contraindications are for people with liver disease, epilepsy, Parkinson's disease, men with prostate symptoms and where there is a history of acute glaucoma. It should not be used in pregnancy or when breastfeeding. It should be avoided if patients are taking sedative drugs, such as antidepressants and hypnotics. Reported side effects include drowsiness, dizziness, dry mouth, insomnia and agitation. Very rarely it can cause muscle stiffness (dystonia).

Doxylamine succinate

Doxylamine is an antihistamine whose sedative and relaxing effects are probably responsible for its usefulness in treating tension headaches. It is an ingredient in some OTC combination products. Like other older antihistamines, *doxylamine* can cause drowsiness, and patients should be warned about this. *Doxylamine*-containing products should not be recommended for children under 12 years of age.

Buclizine

Buclizine is an antihistamine and is included in an OTC compound analgesic, with *caffeine* and *paracetamol*, for migraine because of its antiemetic action.

Feverfew

Feverfew is a herb that has been used in the prophylaxis of migraine for many years. Some clinical trials have been conducted to examine its effectiveness, but results have been conflicting. Adverse effects that have been reported from the use of feverfew include mouth ulceration involving the oral mucosa and tongue (which seems to occur in about 10% of patients), abdominal colic, heartburn and skin rashes. These effects occur both with feverfew leaves and when the herb is formulated in capsules. The herb has a bitter taste, which some patients cannot tolerate. Feverfew was used in the past as an abortifacient, and it should not be recommended for pregnant women with migraine.

HEADACHES IN PRACTICE

Patient perspective

I have suffered from migraine for about 14 years now. At the beginning I did not get much advice or medical help, but since then I've actively sought to find out what triggers my attacks. I have found that I have to eat at regular intervals; skipping meals can often trigger an attack. I need to drink at least 1.5 l of water a day and in the summer often much more. Caffeine was a trigger for me and I have stopped drinking coffee and tea now, although I enjoy herbal teas. It is really worth experimenting with these as you will find one to your taste, eventually. I cut various things (cheese, red wine) out of my diet for a while to see if they were a problem, but luckily it was only cheese that could trigger a migraine. Other things that I know will set off an attack are lack of sleep and strong perfume.

Most people, when hearing the word 'migraine' think of headache. But people who get migraines know that these are not ordinary headaches. The pain and other symptoms associated with migraine can be debilitating, even disabling – but a lot of people, including healthcare professionals, still do not understand. Sometimes, I wish people who think migraines are just a bad headache would have a migraine themselves, so they'd know how mistaken they are – just one migraine for every doctor and pharmacist who will ever treat a migraine patient.

Case 1

For several years, Sandra Brown, a young mother, has purchased combination analgesics for migraine from your pharmacy every few months. She has suffered from migraine headaches since she was a child. Today she asks if you have anything stronger; the tablets do not seem to work like they used to and her migraine is more frequent. She is not taking any medicines on prescription (you check whether she is taking the contraceptive pill or other hormonal contraceptive preparations and she is not). Sandra tells you that she now suffers from migraines two or three times a month for up to a day in duration, and the frequency of attacks is making her life a misery. Nothing seems to trigger them, and the pain has remained much as it was before. She has read about feverfew and wonders whether she should give it a try.

The pharmacist's view

This woman has successfully used an OTC product to treat her migraines for a long time. Many patients who suffer migraines report that they get relief from OTC analgesics. Sandra's migraines have become more frequent for no apparent reason. Referral to the doctor is needed to exclude any serious cause of her headaches before considering further treatments. Also, she may benefit from medication to prevent her migraine occurring (prophylaxis).

The doctor's view

It makes sense for her to be reviewed by her GP, as the headaches are so frequent and making her life a misery. It would be helpful to get more details of her experience of headaches and associated symptoms, for example, any preceding visual symptoms, nature and site of headache and duration; other useful information would include her understanding of migraine, any specific concerns she may have and what sort of treatment she would be prepared to try. There is some evidence that headaches improve more quickly if patients' expectations and concerns are addressed adequately in the consultation. It would also be useful to explore what level of stress she was experiencing which may be a trigger for her attacks, as well as may be resulting from them. Keeping a diary of attacks is always useful and may give a pointer to the cause; for example, attacks related to a particular point in the menstrual cycle. A limited examination would be usual, for example, blood pressure and eye fundoscopy to look for signs of raised intracranial pressure.

Prophylactic treatments (e.g. *propranolol* and *topiramate*) for migraine are available on prescription and are worth considering in patients who report attacks more than four times a month. Although prophylactic treatments may reduce the frequency of migraine attacks, their adverse effects can make them unacceptable to some people. *Topiramate* is associated with a risk of foetal malformations and can impair the effectiveness of hormonal contraceptives. There is inconclusive evidence supporting the use of feverfew as a migraine prophylaxis. Both a*mitriptyline* and *sodium valproate* have reasonable evidence of efficacy in migraine prophylaxis, but are not licensed for this indication. *Sodium valproate* is strongly contraindicated in women of childbearing potential because of very high risks of teratogenicity and neurodevelopment effects on children exposed in utero and must not be used in such women for migraine (it can only be used for the indication of epilepsy in women of childbearing potential if absolutely necessary, provided the Pregnancy Prevention Programme is followed – see the Medicines and Healthcare products Regulatory Agency [MHRA] guidance on the Gov.uk website).

Some newer preventative treatments have recently emerged, but these are only provided under hospital specialist supervision to patients who have very frequent, severe migraine and where other treatments have failed. These include *fremanezumab* and *galcanezumab*.

5-HT1 agonists or ‘triptans’, for example, *sumatriptan*, *zolmitriptan*, *eletriptan*, *rizatriptan* and *naratriptan*, are effective acute treatments for migraine, producing relief from a headache within an hour for many patients. They are contraindicated in those with ischaemic heart disease or poorly controlled hypertension (OTC restrictions on *sumatriptan* are in place for all people with hypertension). Research evidence shows that about one of every three patients treated with oral *sumatriptan* will have his or her headache rapidly improved. Different triptans and different preparations can be tried to find what suits the individual most; for example, a nasal spray or subcutaneous injection might help those where vomiting is a problem.

Case 2

Wei Lin, a woman aged about 30 years, has asked to speak to you. She tells you that she would like you to recommend something for the headaches that she has been getting recently. You ask her to describe the headache and she explains that the pain is across her forehead and around the back of the head, equally on both sides. The headaches usually occur during the daytime and have been occurring several times a week, for several weeks. There are no associated GI symptoms and there is no nasal congestion. No medicines are being taken, apart from a compound OTC product containing *aspirin*, which she has been taking for her headaches. On questioning her about recent changes in lifestyle, she tells you that she has recently moved to the area and started a new job last month. In the past, she has suffered from occasional headache, but not regularly. She does not wear glasses and says she has not had trouble with her eyesight in the past. She confides that she has been worried that the headaches might be due to something serious.

The pharmacist’s view

From the information obtained, it sounds as though this woman is suffering from tension headaches. The location of the pain and lack of associated symptoms lead towards this conclusion. The timing of the headaches indicates that this woman’s recent move and change of employment are probably responsible for the problem. The pharmacist should obtain information about the current headaches in relation to the patient’s past experience. This patient is worried that the headaches may signal a serious problem, but the evidence indicates that this would be unlikely. The pharmacist could recommend the use of *paracetamol* or *ibuprofen*. If the headaches do not improve within 1 week, she should see her doctor.

The doctor’s view

The pharmacist’s assessment makes sense. A tension headache is the most likely explanation. If her symptoms do not settle within 1 week, it would be very reasonable to be reviewed by her GP. The most important aspect of the GP’s assessment would be to determine what her concerns about the headache were; for example, many people with headaches become concerned that they might have a brain tumour or are worried about high blood pressure. Hopefully, examining her and providing appropriate information with reassurance and explanation will assist her in understanding and managing her headache.

Case 3

Sharmeen Ahmed is a regular visitor to your shop. She is a young mother, aged about 25 years, and today she seeks your advice about headaches that have been troubling her recently. The headaches are of a migraine type, quite severe and affecting one side of the head. Mrs Ahmed had her second child a few months ago, and when you ask if she is taking any medicines, she tells you that she recently started to take the combined oral contraception (COC) pill, prescribed at the doctor’s surgery. In the past, she has suffered from migraine-type headaches, but only occasionally and never as severe as the ones she has been experiencing during the past weeks. The headaches have been occurring once or twice a week for about 2 weeks. *Paracetamol* has given some relief, but Mrs Ahmed would like to try something stronger.

The pharmacist’s view

Mrs Ahmed should be referred to her GP surgery immediately. Her history of migraine headaches associated with the COC is a cause for concern; in addition, you have established that she has suffered from migraine headaches in the past.

The doctor’s view

The pharmacist is quite right and should recommend urgent referral to the surgery. She should not take any more COC pills; someone who develops a first migraine attack while taking the pill should be told to discontinue it. If there is a previous history of migraine, the pill may sometimes be used, but if the frequency, severity or nature (especially onset of focal neurological symptoms) of the migraines worsens on the pill, then once again the pill should be discontinued. The reason for this advice is that the migraine could herald a cerebrovascular accident (stroke), which could be prevented by stopping the pill.

Case 4

Ben Jones, a 35-year-old man, comes in asking whether he could have something stronger for his migraines. He tells you that he has had migraines since he was a teenager. The attacks are not that frequent, but are quite disabling when they come on. He is particularly concerned that he travels a lot in his job as an IT consultant and cannot afford to be laid up when he is working away from home. A few years ago he saw his GP who encouraged him to continue with soluble *paracetamol* and also prescribed *domperidone* to reduce his nausea. The GP mentioned that he might benefit from a ‘triptan’ for his migraine if this was not helping him enough.

Ben explains that his migraine starts with a small area of wavy vision in the centre of his visual field, which is then followed about half an hour later by a throbbing headache above his left eye with nausea and vomiting. He says he feels so bad that he has to lie down in a darkened room. He goes on to say that he usually falls asleep after an hour or so and then sleeps fitfully until the next day when he is better.

He is otherwise fit and well, plays regular sports, is a non-smoker and does not take any other medication.

He asks, ‘Can I buy the triptan or do I need to go back to the doctor?’.

The pharmacist’s view

This patient’s history of migraines shows an established pattern and falls within the indications for OTC provision of *sumatriptan*. Since he does not have any indication for referral to the GP, it would be reasonable for him to try *sumatriptan*. He should take this as soon as his headache symptoms start. I would ask him to come back and let me know how the treatment went. If he gets nausea and vomiting, I may advise him to also buy some buccal *prochlorperazine*.

The doctor’s view

The pharmacist’s recommendation is reasonable, since Ben is fit and healthy and has a long-established pattern of migraine previously diagnosed by his GP. *Domperidone* is no longer available OTC and a medical assessment is required before it is prescribed. If nausea remains a significant problem, buccal *prochlorperazine* is a good option. If this is not adequate, he should see a doctor; *metoclopramide* is sometimes used. *Domperidone* is another antiemetic option, but there are concerns about it causing cardiac arrhythmia in some patients.

Note: The Cochrane review resources and NICE guidelines do not have a date as these are often updated. The most up-to-date version should be consulted.

NICE guidelines are also updated periodically.

Section	Clinical Knowledge Summaries (CKS) (`hhttps://cks.nice.ork.uk`)	NHS Health A–Z (`www.nhs.uk/conditions`)	NICE guideline (`www.nice.org.uk`)	Other resources/references
Musculoskeletal problems	☑ Sprains and strains ☑ Back pain – low (without radiculopathy) ☑ Osteoarthritis ☑ Neck pain – whiplash injury ☑ Neck pain – non-specific ☑ Rheumatoid arthritis	☑ Sprains ☑ Back pain ☑ Rheumatoid arthritis ☑ Osteoarthritis ☑ Whiplash	• Low back pain and sciatica in over 16s: assessment and management, NG59 • Rheumatoid arthritis in adults: management, NG100 • Osteoarthritis: care and management, CG177	• Little, P., Lewith, G. Webley, F. *et al.* (2008). Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain *BMJ*; 337:a884 • Cochrane Review. Yoga treatment for chronic non-specific low back pain. • Cochrane Review. Pilates for low back pain.
Analgesics				• Medicines for Children – Paracetamol • `https://www.medicinesforchildren.org.uk/medicines/paracetamol/` (accessed 20 February 2022) • Medicines for Children – Ibuprofen • `https://www.medicinesforchildren.org.uk/medicines/ibuprofen-for-pain-and-inflammation/` (accessed 20 February 2022)

(*Continued*)

Section	Clinical Knowledge Summaries (CKS) (`hhtps://cks.nice.ork.uk`)	NHS Health A–Z (`www.nhs.uk/conditions`)	NICE guideline (`www.nice.org.uk`)	Other resources/references
Headache	☑ Headache – assessment ☑ Headache – tension type ☑ Headache – medication overuse ☑ Migraine	☑ Headaches	• NICE. Headaches in over 12s: diagnosis and management, CG150	• Steiner, T.J., Scher, A.I., Stewart, W.F. *et al.* (2003). The prevalence and disability burden of adult migraine in England and their relationships to age, gender and ethnicity. *Cephalalgia* 23: 519–527 • The International Classification of Headache Disorders, 3rd Edition. `www.ichd-3.org` (accessed 20 February 2022)

CHAPTER 6

Women's Health

CYSTITIS

Cystitis describes a collection of urinary symptoms, including dysuria (painful urination), urinary frequency and urinary urgency caused by inflammation of the urethra and bladder. Bacterial infection is found in 50% of cases, most commonly *Escherichia coli*, often from the gastrointestinal (GI) tract. Some people may be sensitive to chemicals contained in certain products, such as bubble bath, feminine hygiene sprays or spermicidal jellies, which may develop a reaction within the urethra or bladder, causing inflammation and 'chemical cystitis'.

About half of the cases will resolve within 3 days even without treatment. Non-antibiotic over-the-counter (OTC) products are available, and in some areas of the United Kingdom (UK), antibiotics can be supplied through a patient group direction (PGD).

What you need to know

Age
- Adult or child

Female or male

Pregnancy

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
© 2023 John Wiley & Sons Ltd. Published 2023 by John Wiley & Sons Ltd.
Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

Symptoms
  - Urethral irritation
  - Urinary urgency and frequency
  - Dysuria (pain on passing urine)
  - Haematuria (blood in the urine)
  - Vaginal discharge

Upper urinary tract infection (UTI) symptoms
  - Back pain
  - Lower abdominal (suprapubic) pain
  - Fever, chills
  - Nausea/vomiting

Duration

Previous history

Diabetes

Relationship to sex

Menopausal symptoms

Medication

Bath toiletries, vaginal sprays/deodorants

Significance of questions and answers

Age

Any person under 16 years of age with the symptoms of cystitis should always be referred to the doctor for further investigation and treatment. UTIs in children may result in damage to the kidneys or bladder.

Gender

Cystitis is more common in women than in men because bacteria need to pass up along the urethra and enter the bladder. As the urethra is much shorter in females than in males, the passage of bacteria is much easier, and the process may be facilitated by sexual intercourse (see Figure 6.1 for an illustration of the anatomy). There is also some evidence that prostatic fluid has antibacterial properties, which provides an additional defence against bacterial infection in males. Any man who presents with the symptoms of cystitis requires medical referral

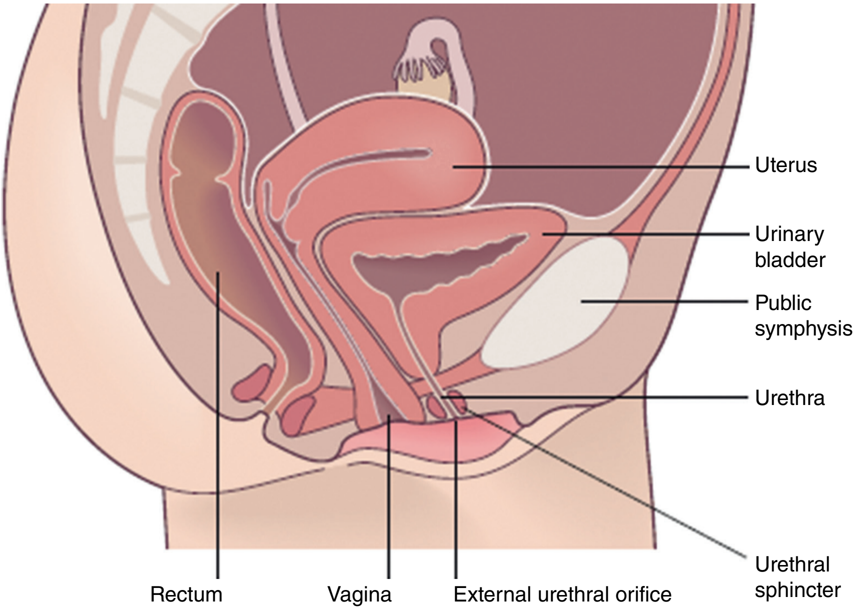


FIGURE 6.1 Anatomy of the female pelvis. *Source: Anatomy and Physiology for Nurses at a Glance*, Page 76, Ian Peate and Muralitharan. Reproduced with permission of John Wiley & Sons.

because of the possibility of more serious conditions, such as kidney or bladder stones or prostate problems.

Pregnancy

Any pregnant woman who presents with symptoms of cystitis needs referral because bacteriuria (presence of bacteria in the urine) in pregnancy can lead to kidney infection and other problems.

Symptoms

Cystitis sufferers often report that the first sign of an impending attack is an itching or pricking sensation in the urethra. The desire to pass urine becomes frequent; women with cystitis may feel the need to pass urine urgently, but pass only a few burning, painful drops. This frequency of urine occurs throughout the day and night (nocturia). Dysuria (pain on passing urine) is a classical symptom of cystitis. After urination, the bladder may not feel completely empty, and even straining produces no further flow. The urine may be cloudy and strong smelling.

Blood in urine

Macroscopic haematuria (visible presence of blood in the urine) is an indication for referral to the general practitioner (GP) surgery. It occurs in UTI when the bladder lining and urethra are so inflamed that they bleed. This is not usually serious and responds quickly to antibiotic treatment. Lesser degrees of bleeding 'microscopic haematuria' are detected by a dipstick test or microscopic examination. Sometimes, blood in the urine may indicate other problems, such as a kidney stone where pain in the loin or between the loin and groin is the predominant symptom. When blood in the urine develops without any pain, specialist referral is required to exclude the possibility of a tumour in the bladder or kidney; therefore, any person reporting painless haematuria (red urine) should be advised to see their GP urgently.

Vaginal discharge

Absence of vaginal discharge is a key feature of acute uncomplicated cystitis; 80% of women with vaginal discharge and symptoms of cystitis do not have a UTI. The presence of vaginal discharge would indicate local fungal (usually candida or 'thrush'), trichomoniasis or bacterial infection and would require referral. Vaginal pruritus or discharge may suggest vaginitis.

Chlamydia is a sexually transmitted infection (STI) most commonly seen in women aged 16–24 years. About 1 in 10 women under the age of 25 years may have it. Unfortunately, about 80% of women who have this infection are asymptomatic. Those who do can have symptoms of cystitis, an alteration in vaginal discharge or lower abdominal pain. Chlamydia can cause pelvic inflammatory disease (PID) and infertility. It is important that the infection be detected and treated. Screening programmes for chlamydia are now widespread.

Other symptoms

Cystitis may be accompanied by suprapubic (lower abdominal) pain and tenderness.

Upper UTI symptoms

Systemic involvement, demonstrated by fever, chills, nausea, vomiting, loin pain and tenderness, is indicative of more serious infection, such as pyelonephritis, requiring urgent referral because of the risk of septicaemia. Back pain may also indicate an upper UTI.

Duration

In the absence of other symptoms or problems, treatment with OTC preparations is reasonable for mild cystitis of short duration (<3 days).

Previous history

Women with recurrent cystitis (more than two episodes in the last 6 months or more than three episodes in the last year) should see their doctor.

An estimated 1 in 10 cases of UTI is followed by relapse (the same bacterium being responsible) or reinfection (where a different organism may be involved). The remaining nine cases clear up without recurrence.

It is important to identify any preparations recently taken to treat symptoms of UTI or cystitis. The pharmacist may then decide whether an appropriate remedy has been used. Failed medication would be a reason for referral to the GP surgery.

Diabetes

Recurrent cystitis can sometimes occur in diabetes; therefore, anyone describing a history of increasing thirst, weight loss and a higher frequency of passing urine than normal should be referred. In patients with known diabetes and recent onset of urinary symptoms, it is best that they are assessed at the GP surgery as UTI can be more troublesome and sometimes more difficult to treat.

Cystitis after sex

Sexual intercourse may precipitate an attack of cystitis due to minor trauma or resulting infection when bacteria are pushed along the urethra (see Figure 6.1 for illustration of the anatomy). The occurrence of urinary symptoms after starting a new sexual relationship is often called 'honeymoon cystitis'.

Women who get frequent episodes of cystitis following sexual intercourse may be prescribed a supply of an antibiotic, such as *trimethoprim*, by their doctor to take within 2 h of sex.

Postmenopausal women

Oestrogen deficiency in postmenopausal women leads to thinning of the lining of the vagina. Lack of lubrication can mean the vagina and urethra are vulnerable to trauma and irritation, and attacks of cystitis can occur (see also the section 'Menopause' later in this chapter). There may be other symptoms, such as hot flushes and night sweats.

Medication

Cystitis can be caused by cytotoxic drugs, such as *cyclophosphamide*. Other drugs, such as opioids and nifedipine, can also cause urinary tract symptoms.

Other precipitating factors

Other precipitating factors may include the irritant effects of toiletries (e.g. bubble baths and vaginal deodorants) and other chemicals (e.g. spermicides and disinfectants). Use of a diaphragm for contraception can also cause symptoms of cystitis. Lack of personal hygiene is not thought to be responsible for this problem, except in extreme cases.

When to refer

All men, and children under 16 years of age
Pregnancy
Fever, nausea/vomiting
Loin pain or tenderness
Haematuria
Vaginal discharge
Duration of longer than 2 days
Recurrent cystitis
Failed medication

Treatment timescale

If symptoms have not subsided within 2 days of beginning the treatment, the patient should see their doctor.

MANAGEMENT

For pain relief, offer *paracetamol* or *ibuprofen* for up to 2 days. Fever will also be treated, bearing in mind that a temperature above 38.5°C is more characteristic of higher UTI, such as pyelonephritis, and all of these cases should be referred. The pharmacist can also recommend a product that will alkalinise the urine and provide symptomatic relief, although there is no good evidence of effectiveness. Other OTC preparations are of doubtful value. In addition to treatment, it is important for the pharmacist to offer advice about fluid intake (see the section 'Practical points' further in this chapter). For women in whom cystitis is a recurrent problem, self-help measures can sometimes prevent recurrence. Signposting to relevant information is useful.

Potassium and sodium citrate

Potassium and *sodium citrate* work by making the urine alkaline. The acidic urine produced as a result of bacterial infection is thought to be responsible for dysuria; alkalinisation of the urine may help to relieve discomfort, although there is no strong evidence of its benefit. Alkalinising the urine will not produce an antibacterial effect, and it is important to tell patients that if symptoms have not improved within 2 days, they should see their doctor. Proprietary sachets are more palatable than *potassium citrate mixture*. A planned systematic review of the effectiveness of urinary-alkalinising agents found that none of the identified studies met the inclusion criteria and no conclusion about effectiveness could be reached. In the absence of evidence of effectiveness, Clinical Knowledge Summaries (CKS) advises against recommendation of urine-alkalinising agents.

Contraindications

Patients taking potassium-sparing diuretics, aldosterone antagonists or angiotensin-converting enzyme inhibitors should not use *potassium citrate* because it may cause hyperkalaemia. *Sodium citrate* should not be recommended for hypertensive patients, anyone with heart disease or pregnant women.

Warning

Patients should be reminded not to exceed the stated dose of products containing *potassium citrate*: cases of hyperkalaemia have been reported in patients taking *potassium citrate mixture*.

Complementary therapies

Cranberry juice has been recommended as a folk remedy for years as a preventive measure to reduce UTI. A systematic review of evidence showed that drinking *cranberry juice* on a regular basis does not appear to have a significant benefit in preventing UTIs. *Cranberry juice* or capsules are also unlikely to be effective in the treatment of acute cystitis. Patients taking *warfarin* should not take cranberry products.

PRACTICAL POINTS

1. There is little evidence to support much of the traditional advice that has been given to women with cystitis, and the list that follows can be discussed with the woman to consider acceptability:
   (i) Drinking at least the normally recommended amount of daily fluids is important. Large quantities of fluids should theoretically help in cystitis

because the bladder is emptied more frequently and completely as a result of the diuresis produced; this is thought to help flush the infecting bacteria out of the bladder.

  (ii) During urination, the bladder should be emptied completely; to achieve this, wait for 20 s after passing urine and then strain to empty the final drops. Leaning backwards is said to help to achieve a more complete emptying of the bladder compared with the usual sitting posture.
  (iii) After a bowel motion, wiping with toilet paper from front to back may minimise transfer of bacteria from the bowel into the vagina and urethra.
  (iv) Urination immediately after sexual intercourse will theoretically flush out most bacteria from the urethra, but there is no evidence to support this.
2. Reduced intake of coffee and alcohol may help because they seem to act as bladder irritants in some people.
3. Chlamydia screening and treatment.

In England, the National Chlamydia Screening Programme (NCSP) offers screening to men and women under the age of 25 years attending various health clinics. As part of this, in some areas, community pharmacies offer a screening (and sometimes treatment) service. Testing is recommended annually or on change of sexual partner (whichever is more frequent). Men are offered a urine test; women are offered a urine test or given a vulvovaginal swab to self-collect the sample. Those with positive results are offered treatment, usually with *azithromycin* or *doxycycline*, and advised about informing their sexual partner(s) who should also be tested. Following treatment, the test is repeated after 3 months. The use of condoms can prevent the spread of infection.

Some community pharmacies in England, Wales and Scotland supply *azithromycin* or *doxycycline* for chlamydial infection via a PGD through local commissioning arrangements.

Cystitis in practice

Case 1

Mrs Anne Lawson, a young woman in her 20s, asks to have a quiet word with you. She tells you that she thinks she has cystitis. On questioning, you find that she is not passing urine more frequently than normal, but that her urine looks dark and smells unpleasant. Mrs Lawson has back pain and been feeling feverish today. She is not taking any medicine from the doctor and has not tried anything to treat her symptoms.

The pharmacist's view

The presence of fever and back pain indicates that this woman may have an infection higher in the urinary tract and she should see her doctor as soon as possible.

The doctor's view

Referral to the surgery is advisable. She may have a higher UTI, possibly in the kidney. However, there is insufficient information to make a definite diagnosis. It would be useful to know if she has pain on passing urine and the site and nature of her back pain. Her symptoms could, in fact, be accounted for by something like a flu-like viral infection in which the backache is caused by muscular inflammation and the urine altered because of dehydration. The GP is likely to check the urine in the surgery with a dipstick test and also send a sample (midstream specimen of urine) to the laboratory for microscopy and culture. If the dipstick test were positive for blood, leucocytes and/or nitrites, a urinary infection would be likely, and the patient would be started on antibiotics awaiting laboratory confirmation of the bacteria responsible. If this is an upper UTI, she may subsequently require further investigations of her renal tract, e.g. an ultrasound of her kidneys and possibly an intravenous urogram. Severe cases of kidney infection require emergency hospital admission for intravenous antibiotics; a serious concern is the high risk of septicaemia.

Case 2

A young man asks if you can recommend a good treatment for cystitis. In response to your questions, he tells you that the medicine is for him: he has been having pain on passing urine since yesterday. He otherwise feels well and does not have any other symptoms. No treatments have been tried already and he is not currently taking any medicines.

The pharmacist's view

This man should be referred to the GP surgery because these symptoms of cystitis are uncommon in men and may be the result of a more serious condition.

The doctor's view

Referral is necessary for accurate diagnosis. A urine sample will need to be collected for appropriate analysis. If it shows that he has a urinary infection, then treatment with a suitable antibiotic can be given and a referral to a specialist for further investigation made. The reason for referral is that urinary infection is relatively uncommon in men compared with women and may be caused by some structural problem within the urinary tract.

If in addition to discomfort on passing urine he has a urethral discharge, he is most likely to be suffering from a sexually transmitted disease (STD), such as chlamydia or gonorrhoea. To investigate this possibility, he would be referred to a sexual health clinic for investigation and contact tracing and treatment, if indicated; GPs are advised not to manage suspected urethritis and to refer all suspected cases to these clinics. If pharmacists are consulted about urethral discharge by men (or women), or their partner, they can advise them to go directly to a local clinic.

Chlamydia is the most prevalent STD and the clinic would treat this using *azithromycin* or *doxycycline*. Although often symptomless in men, chlamydia can be complicated by an infection around the testis, which becomes very painful, swollen and red. It may also lead to reduced fertility. Another complication of chlamydia is the development of a reactive arthritis (Reiter's syndrome), which often affects the knees and feet and can be associated with conjunctivitis.

Case 3

It is Saturday afternoon and a young woman whom you do not recognise as a regular customer asks for something to treat cystitis. On questioning, you find out that she has had the problem several times before and that her symptoms are urinary frequency and pain on passing urine. She is otherwise well and tells you that her doctor has occasionally prescribed antibiotics to treat the problem in the past. She is not taking any medicines.

The pharmacist's view

Saturdays, when local primary care practices are closed, often present dilemmas in community pharmacy. This patient has had these symptoms before and will be unable to attend her GP surgery (or will be unable to talk to her GP or the practice nurse) before Monday. If she is prepared to wait, she should call the GP surgery on Monday to arrange a consultation if the symptoms have not improved, and you can explain that she may be asked to take a urine sample to the surgery. In the meantime, she is experiencing a lot of discomfort, and it would be reasonable to suggest the use of *paracetamol* or *ibuprofen* to help with pain and perhaps to offer the use of an alkalinising agent, such as *sodium* or *potassium citrate*, over the weekend, explaining that it may ease discomfort and that there is no strong evidence supporting its use. You could advise her to drink plenty of fluids, but with minimum consumption of tea, coffee and alcohol, all of which may aggravate her symptoms.

The doctor's view

The story is suggestive of cystitis. The pharmacist's view is sound, but I think the advice should include 'safety netting' with advice on what to do if things deteriorate, and also advise on the option of contacting the out-of-hours service if she is not prepared to wait. Symptomatic treatment with *potassium citrate* may help her until after the weekend. It would be interesting to know whether her cystitis symptoms usually resolve as in many cases these will get better after a few days without treatment. In cases of uncomplicated UTI in women, it is no longer routine to send urine for culture; however, if the diagnosis is unclear, the doctor or nurse may check her urine to see if it is cloudy and test for the presence of blood, protein and nitrite in it using dipsticks. If she has had frequent episodes of UTI or this is a recurrence, a sample would be sent to the lab for microbiology. If her symptoms get worse (for example, she develops fever, rigors, loin pain and feeling very unwell) , she should be advised to speak to the out-of-hours service as she may need to start antibiotics before Monday. Changing patterns of resistance mean that first-line 'empirical' (based on likely causes) antibiotics vary according to local protocols, but *nitrofurantoin* or *trimethoprim* is usually a first-line treatment.

INCONTINENCE

Between 3 and 6 million people in the UK have some degree of urinary incontinence ranging from leaks of a few drops of urine to voiding of the bladder. The problem affects both men and women, is commoner in women and prevalence increases with age. Incontinence is an underestimated problem that affects patients' psychological and social well-being, as well as their physical health. There is a significant adverse effect on health-related quality of life that can be equivalent to the impact of chronic medical conditions. Occasional urine leakage is common and accepted by many women as a normal part of growing older. However, leaking should never be considered normal; incontinence in both men and women is associated with embarrassment, distress and stigma, and most people do not consult their doctor about it. An important part of the pharmacy role is identifying unmet need and signposting people if they have significant problems and not yet had formal assessment.

There are three main types of incontinence: urgency (including overactive bladder [OAB]), stress and mixed. Many patients visit the pharmacy to purchase absorbent pads or pants; this offers the pharmacist the opportunity to ask patients whether they have tried behavioural and lifestyle changes that could benefit their symptoms, to advise them on available products and to see if they might need to be referred to their primary care practice for further assessment. Inviting the patient into the consultation room will enable the conversation to be held more privately.

What you need to know

Age
Duration
Nature of the problem
Precipitating factors
    Sneezing, heavy lifting, coughing, laughing
    Food and drinks
    Physical activity/exercise
    Difficulty in accessing the toilet
    Overweight/obesity
Signs of UTI
Constipation
Fluid intake
Smoking
Medication

Significance of questions and answers

Age

There is an overall increase in the prevalence of symptoms with age in both women and men; this starts from a lower base in men, but in old age increases to levels similar to that of women. There are three distinct peaks of onset for women: during reproductive age, menopause and old age. The major problem seen in older people relates to urge incontinence. There are recognised associations with pregnancy/childbirth, obesity and cognitive impairment.

Duration

It is important to find out whether the problem is recent, chronic or intermittent. If it is recent, you can explore any other changes that the patient has noticed to see if there are precipitating factors. Patients may describe a problem they have had for years and which has gradually become worse.

Nature of the problem

Possible questions to ask the patient to obtain relevant information are as follows:

- When did the problem start?
- Does urine leak when you sneeze, cough, laugh or do exercise?
- Do you ever have difficulty making it to the bathroom in time?
- Do you pass urine more than eight times a day?
- Do you get up more than once at night to go to the bathroom?
- Are you using toilet paper, paper towels or pads in your underwear to protect against accidents?
- Is leakage of urine restricting your sexual or social functioning/activity?
- Is your leakage causing insomnia or making you depressed?
- Do you ever get constipated?
- Do you have a prolapse – a vaginal bulge or lump 'coming down' below?
- Are you on drug treatment, such as diuretics or antidepressants?

Stress urinary incontinence

Stress urinary incontinence (SUI) is a condition that is described as dribbling or leakage of urine on sneezing, coughing, laughing, exercising, rising from sitting, or lifting. It is common and seen in 50% of cases of incontinence. The urethral sphincter muscle and/or pelvic floor muscles are insufficiently strong to contain the flow of urine when intra-abdominal pressure increases. SUI is commonly associated with pregnancy and childbirth where damage causes pelvic organ prolapse, which stops the sphincter muscles or pelvic floor working properly. In primary care in the UK, 8.4% of women report a vaginal bulge or lump indicating prolapse. Lack of oestrogen at the menopause can affect the health of vaginal and urethral tissue, and the resulting atrophy can aggravate or cause SUI, which is another common time for prolapse to occur.

Urge incontinence

Urge incontinence is related to urgency and failure to reach a toilet in time. Patients describe feeling a sudden, intense and uncontrollable urge to pass urine and may say that they know if they do not go to the toilet straight away, they will have urine leakage; it is seen in 15% of cases.

Overactive bladder

OAB is defined as urgency (with or without urge incontinence) where the detrusor muscle, which controls the bladder, is overactive. Key features are usually frequency (needing to go to the toilet more than eight times a day) and nocturia (needing to get up to go to the toilet during the night). Incontinence occurs if the urge to urinate cannot be overcome and can result in large volumes of leakage. OAB is associated with falls and fractures in older people because of the need to rush to the toilet.

Mixed incontinence

Mixed incontinence is a combination of stress and urge incontinence, and occurs in around 35% of cases. In mixed incontinence, treatment is directed towards the predominant symptom.

Nocturia

It can be common for many people to wake up once during the night to urinate, but urge to urinate more frequently may be a sign of urinary problems. Thus, nocturia (the need to urinate during the night) can become nocturnal urinary frequency – i.e. having to urinate more often at night. It becomes more common with increasing age and occurs in both men and women. Nocturia can be associated with daytime urinary frequency or occur by itself.

Constant leakage

Another rare type of incontinence is continuous or total incontinence. This type of constant leakage of urine can be due to a fistula where a hole has formed in the bladder (e.g. a vesicovaginal fistula). Some patients may have had this for many years (i.e. following trauma at childbirth) and may not have sought help, but these can usually be readily corrected surgically.

Precipitating factors

See Table 6.1 for a summary of types of incontinence and their precipitating factors. In stress incontinence, any action that causes a raise in intra-abdominal pressure can cause leakage of urine, including sneezing, heavy lifting, coughing and laughing.

TABLE 6.1 Summary of types of incontinence and their precipitating factors

Precipitating factors	Type of incontinence			
	Stress	OAB	Urgency	Mixed
Sneezing, coughing, laughing	√			√
Drinks and foods	√	√	√	
Caffeine		√	√	√
High-impact exercise	√			√
Lifting	√			√
Difficulty in accessing toilet		√	√	√
Overweight/obesity	√	√	√	√
Constipation		√	√	√
Fluid intake		√	√	√
Smoking	√	√	√	√
UTI			√	√
Medication	√	√	√	√

Food and drink

Some drinks and foods can stimulate the bladder and some may increase urine volume. They include alcohol, caffeine, carbonated drinks/sparkling water, artificial sweeteners, chocolate, chili peppers, and foods that are high in spice, sugar or acid, especially citrus fruits. Caffeine and alcohol have a diuretic effect.

Restricting fluids in the evening (especially coffee, caffeinated beverages and alcohol) may help. Timing the intake of any diuretic medication (take them mid to late afternoon, 6 h before bedtime) is also useful advice.

Physical activity/exercise

High-impact exercise that involves running, skipping, jumping or landing increases the downward pressure on pelvic floor muscles and can cause stress incontinence. Doing sit-ups can have the same effect. Lifting puts strain on the pelvic floor muscles, so should be avoided as much as possible. If lifting is unavoidable, such as picking up children or shopping bags, tightening the pelvic floor muscles before and during the lift will help.

Difficulty in accessing the toilet

Restricted mobility may contribute to incontinence by making it difficult to get to the toilet in time, which is sometimes called functional incontinence. Needing to get from the bedroom to the bathroom at night, even over a short distance, can result not only in the passage of urine but also increased risk of trips and falls when hurrying.

Overweight/obesity

It is thought that obesity (i.e. a body mass index (BMI) of over 30) contributes to stress incontinence because abdominal fat increases intra-abdominal pressure. This in turn increases pressure on the bladder and pelvic floor muscles, which may stretch and weaken them. These changes are thought to impact on the integrity of the urethral sphincter and worsen detrusor instability and OAB. Symptoms may improve, and could go away completely, if any excess weight is lost.

Constipation

The rectum is located near the bladder and they share some nerves (see the illustration of the anatomy in Figure 6.1). Hard, compacted stool in the rectum and straining to pass the stool can increase pressure on the bladder and cause overactivity in these nerves resulting in increased urinary frequency. Chronic colorectal distention from constipation and chronic straining may limit the extent of bladder distention and lead to the need to empty the bladder more often. Sometimes, a prolapse around the rectal area, associated with weakened perineal tissue, may contribute to incontinence.

Smoking

There are several ways in which smoking might contribute to incontinence. Chemicals from tobacco smoke are excreted in the urine and are in contact with the bladder wall where they can have an irritant effect, which can cause urgency and OAB symptoms. A 'smoker's cough' increases intra-abdominal pressure on the pelvic floor muscles and increases the likelihood of stress incontinence. Nicotine stimulates the detrusor muscle of the bladder.

Signs of urinary tract infection

See the section 'Cystitis' earlier in this chapter. The main symptoms of cystitis are a burning sensation when passing urine and cloudy urine, as well as systemic symptoms, such as fever or chills.

Medication

Any medicine that causes constipation can contribute to incontinence. Medicines used to treat urge incontinence are often antimuscarinics and constipation is a likely side effect, which may paradoxically aggravate the problem. Medicines that are associated with urinary incontinence include diuretics, angiotensin-converting enzyme (ACE) inhibitors (because of cough) and selective serotonin reuptake inhibitors (SSRIs). If the onset of symptoms coincides with starting one of these medicines, consider referring the patient.

When to refer

Symptoms of incontinence not previously clinically assessed
Loss of bladder control or continuous leakage
Unable to feel or contract pelvic floor muscles
Signs of UTI, i.e. fever, dysuria, bladder or urethral pain
Haematuria (even in the absence of other symptoms)
Prostate-related urinary symptoms in men
Associated faecal incontinence

MANAGEMENT

Behavioural and lifestyle changes

If the patient does not have symptoms/signs that need immediate referral, they may want to try lifestyle and behavioural changes to see if they help. Many GP surgeries now have nurses with expertise in managing incontinence, and patients can usually see them initially for assessment and support. These nurses will triage patients and determine if a doctor's assessment is indicated.

Lifestyle interventions include:

- Weight loss (if BMI is over 30)
- Caffeine and alcohol consumption reduction
- Fluid management, including timing of fluid intake in relation to bedtime
- Reduction of physical exertion
- Adjustment of timing of medicines, such as diuretics
- Smoking cessation
- Resolution of chronic constipation and prevention of recurrence
- Reduction in heavy lifting
- Exercise and pelvic floor muscle training (PFMT)

Pelvic floor muscle training

PFMT is an effective intervention, particularly for stress and mixed incontinence, where NICE recommends it as first-line treatment for women who can contract their pelvic floor muscles. A systematic review found the following:

Cure of incontinence: Women with SUI who completed PFMT were eight times more likely to report being cured and those with any type of urinary incontinence were five times more likely to report being cured.

Cure or improvement: Women with SUI in PFMT groups were, on average, six times more likely to report they were cured or improved. Women with all types of urinary incontinence in the PFMT group were roughly twice as likely to report they were cured or improved.

Negative side effects of performing PFMT were rare and in the two trials that did report them, the side effects were minor.

PFMT is as effective as surgery for around half of women with SUI. Women who do pelvic floor muscle exercises during pregnancy have a decreased risk of urinary incontinence in late pregnancy and in the immediate postnatal period.

PFMT aims to strengthen the urethral sphincter mechanism. It involves the voluntary contraction and relaxation of the levator ani muscle, which supports the vagina, bladder and urethra and contributes to the skeletal muscle component of an effective urethral sphincter mechanism. Increasing the strength and endurance of the levator ani muscle enhances the force of urethral closure, including in response to a sudden increase in abdominal pressure.

NICE recommends at least eight pelvic floor muscle contractions performed three times a day for a minimum of 12 weeks. The stomach, leg and buttock muscles should remain relaxed while contracting the pelvic floor muscles. If PFMT is beneficial, the exercises should be sustained after the initial period of 12 weeks. The key to successful results from PFMT exercises is practice. NICE advises that PFMT is supervised as part of a local National Health Service (NHS) commissioned service, probably because this offers in-built monitoring and conversations to sustain motivation and make a successful outcome more likely. However, some women will want to try PFMT without being referred into the formal healthcare system; in such cases, the pharmacist can signpost to appropriate information and emphasise the importance of practice and of continuing for 12 weeks. Several apps are available, including the NHS ‘Squeezy’ app, and pharmacy teams should make themselves familiar with these so that they can recommend one where appropriate.

Bladder training for urge and mixed incontinence

Bladder training (sometimes referred to as delayed urination) involves learning how to hold more urine in the bladder and so reduce the number of times the patient needs to pass urine. It also includes lifestyle advice on the amount and types of fluids to drink, and coping strategies to reduce urgency. Supervised bladder training is recommended by NICE as first-line treatment for urge or mixed urinary incontinence.

Simple advice for patients: Start by trying to hold your urine for 5 min every time you feel the urge to urinate. When it becomes easy to wait for 5 min, try to increase the time to 10 min. Continue to increase the amount of time until you are urinating every 3–4 h. When you feel the urge to urinate before your time is up, you can try relaxation techniques; breathe slowly and deeply.

Complementary therapies

NICE advises against the use of complementary therapies (e.g. acupuncture and biofeedback) for incontinence.

PRACTICAL POINTS

Nurse experts

Practice and community nurses are an important resource for patients with incontinence. Many practices now have access to continence advisers with specialist training. The nurse experts may make the initial in-depth assessment and are often involved in providing some degree of behavioural therapy. The pharmacy should obtain information about available nurse services in the area, including any associated with local GP practices.

Absorbent pads and pants

Pads and pull-up pants use the same technology as babies' nappies and have a 'hydrophobic' layer, which draws urine away from the surface of the product so that the skin stays dry. Although NICE advises their use only while awaiting a diagnosis, patients often choose to buy and use these products as an additional strategy and to increase confidence about avoiding potentially embarrassing leakage of urine when they are out of their house.

Prescribed medicines for urge incontinence

After 6 weeks of bladder training, NICE advises trying drug treatment if the woman has not experienced satisfactory improvement. Anticholinergics/antimuscarinics are commonly used, and all are currently in the prescription-only medicine (POM) category, although it has been proposed that pharmacists could safely supply them OTC (oxybutynin has been supplied this way in some countries). Examples of antimuscarinic drugs include *oxybutynin*, *tolterodine* and *solifenacin*. NICE recommends that an explanation should be given to patients that side effects of dry mouth and constipation indicate that the medicine is working. Of course, constipation can contribute to, or worsen, urinary incontinence and patients need a strategy to deal with it if it turns out to be a problem for them. *Duloxetine* and *mirabegron* are among alternative treatments.

Intravaginal oestrogen

Intravaginal oestrogens may help in relieve bladder symptoms in postmenopausal women with vaginal atrophy (see the section 'Menopause' later in this chapter). It is proposed that some of these products may be made available for pharmacy supply (P) in the next few years.

Urinary incontinence in practice

Case study 1

Mrs McLean is an 86-year-old lady who asks to have a private word with you. She tells you that her bladder problem has started up again and she feels very downhearted and not her usual self. She also complains of constipation. Usually, she goes for a walk in her local park every day with her best friend, or her daughter, but has had to stay in for a fortnight because the weather this winter has been unusually snowy, icy and cold. She says that she is 'spending too much time sitting down'. Her urinary symptoms are urgency – if she needs to go to the toilet at night she does not always make it to the toilet in time and even in the daytime it can be a problem. Also, when she lifts washing out of the washing machine and when she coughs, she starts to leak urine and finds it difficult to stop the flow, suggesting some stress component. She is now worried about going out even though the weather is much better. She has been on a number of medicines for several years, which include an ACE inhibitor, a statin and *clopidogrel* for stroke prevention. You see from the Patient Medical Record (PMR) that she was recently prescribed *solifenacin* 5 mg daily and the pharmacy first dispensed it about 4 weeks ago. When asked about the constipation, she says that this is very unusual for her. It goes back 'a few weeks' and her urinary problems seem to have got worse at the same time. You ask if she has been experiencing a dry mouth and the lady says, 'it's funny you should ask that because I'm finding that I'm drinking more tea because during the day my mouth does seem dry'.

The pharmacist's view

This lady first came to see me a few months ago asking about her bladder problem. We had a conversation in the consultation room and she confided a lot of information. She had a 'bladder operation' about 15 years ago and her urinary problems have now returned. I referred her to the GP and she called in a few weeks later to say she had seen a specialist, started pelvic floor exercises and been given a lot of useful information. I now plan to refer her back to the GP or practice nurse again because it sounds like the *solifenacin* side effects are counteracting any potential positive results from her pelvic floor exercises and it is unclear whether she is getting benefit from the medicine.

The nurse's view

I am trained as a continence adviser and I am an independent prescriber. The lady describes mixed incontinence with urgency and stress components. Her 'bladder operation' was probably for a prolapse and this may have recurred necessitating the specialist referral. This is not uncommon as people get older as tissues stretch and become less strong. Drugs, such as *solifenacin*, for 'OAB' can be problematic in older people as they have antimuscarinic properties and the elderly are very susceptible to these. The pharmacist is right to advise the patient to see the GP or practice nurse. I would stop the *solifenacin* and see how the patient gets on without this. I would emphasise the importance of getting 'out and about' and increasing mobility and see what results can be obtained using pelvic floor exercises. I would reinforce the value of these and explain how to do them. It may be possible to use another drug, such as *mirabegron* (which does not have antimuscarinic side effects), if this does not yield results, but I would be wary of adding to her polypharmacy unless absolutely necessary.

DYSMENORRHOEA

Dysmenorrhoea, or painful periods, is cramping pain, usually in the lower abdomen, occurring shortly before or during menstruation, or both. Primary dysmenorrhoea is defined as pain in the absence of pelvic disease and is thought to be caused by uterine prostaglandins being produced. Secondary dysmenorrhoea is caused by an underlying pelvic pathology, such as pelvic infection, endometriosis, fibroids or endometrial polyps.

Period pain is common and a normal part of the menstrual cycle; most women get it at some point in their lives. Up to 15% of women will have severe symptoms necessitating time off school or work. Most women do not seek medical advice unless self-medication is unsuccessful. Discussing menstrual problems is potentially embarrassing for the patient and the pharmacy consultation room can be offered to provide more privacy.

What you need to know

Age
Previous history
Regularity and timing of cycle
Timing and nature of pains
Relationship with menstruation
Other symptoms
    Headache, backache
    Nausea, vomiting, constipation
    Faintness, dizziness, fatigue
    Emotional symptoms
Medication

Significance of questions and answers

Age

The initial onset of primary dysmenorrhoea is usually 6–12 months after starting periods (menarche), with the onset of ovulatory cycles. The age at menarche varies between 10 and 16 years. Secondary dysmenorrhoea can occur at any time after menarche, but most commonly arises as a new symptom when a woman is in her 30s or 40s, after onset of the underlying causative condition. Primary dysmenorrhoea often diminishes after having children.

Previous history

Dysmenorrhoea usually occurs when periods become regular, typically 6–12 months after menarche. During the early months (and sometimes years) of menstruation, ovulation may not occur and anovulatory cycles are usually, but not always, pain free. You need to establish whether the menstrual cycle is regular and the length of the cycle, and when the timing of pains occur in relation to menstruation.

Timing and nature of pains

Primary dysmenorrhoea

Primary dysmenorrhoea usually takes the form of lower abdominal or pelvic pain. The pain typically starts shortly before the onset of menstruation and lasts for between 8 and 72 h, and improves as the menses progresses. Non-gynaecological symptoms, such as nausea, vomiting, diarrhoea, fatigue, irritability, dizziness, bloating, headache, lower back pain and emotional symptoms, may be present.

Mittelschmerz

Mittelschmerz is ovulation pain that occurs in the middle of the cycle, at the time of ovulation. The abdominal pain usually lasts for a few hours but can last for several days. It is usually localised to one side and can occur on different sides with each period (ovulation occurs on a random ovary each cycle). In some women, brief episodes of this pain are the only symptoms of dysmenorrhoea.

Secondary dysmenorrhoea

A secondary cause is more likely if symptoms started after several years of relatively untroublesome or painless periods. Other associated symptoms include dyspareunia (pain with sex), vaginal discharge, menorrhagia, intermenstrual bleeding and post-coital bleeding.

The pain is usually different than primary dysmenorrhoea in that it is not consistently related to menstruation alone and may persist after menstruation finishes or may be severe throughout the menstrual cycle. Sometimes, non-gynaecological symptoms occur, including back pain, abdominal pain, rectal pain and bleeding, which may suggest endometriosis. In pelvic infection, a vaginal discharge may be present in addition to pain. Any patient with suspected secondary dysmenorrhoea should be referred for further investigation.

Endometriosis

Endometriosis mainly occurs in women aged 30–45 years, but it can also occur earlier. The uterus has an inner lining surface (endometrium). In endometriosis, pieces of endometrium are found in places external to the uterus. They may lie on the outside of the uterus or ovaries, or elsewhere in the pelvis. Each piece of endometrium is sensitive to the hormonal changes that occur during the menstrual cycle and goes through the monthly changes of thickening, shedding and bleeding. This causes pain wherever the endometrial cells are found, usually begins up to 1 week before menstruation, and both lower abdominal pain and lower back pain may occur. The pain may also be non-cyclical and may occur with sexual intercourse (dyspareunia). Endometriosis may cause subfertility. Diagnosis can be confirmed by laparoscopy.

Pelvic infection

Pelvic infection may be acute or chronic. It is important to know whether or not an intrauterine contraceptive device (IUCD) (coil) is used. The coil can cause increased discomfort and heavier periods, and may also predispose to infection. Acute pelvic infection occurs when a bacterial infection develops within the fallopian tubes. There is usually severe pain, fever and vaginal discharge. The pain is in the lower abdomen and may be unrelated to menstruation. It can be confused with appendicitis.

Chronic PID may follow on from an acute infection. The pain tends to be less severe, associated with periods, and may be experienced during intercourse. It is thought that adhesions that develop around the tubes following an infection may be responsible for the symptoms in some women. In others, however, no abnormality can be found.

Other symptoms

Women who experience dysmenorrhoea will often describe other associated symptoms (nausea, vomiting, diarrhoea, fatigue, irritability, dizziness, bloating, headache, lower back pain, etc.). Many women feel emotional and upset at the time of a period. Distressing symptoms occurring in the second half of the menstrual cycle are part of the premenstrual syndrome (PMS) (discussed further in the next section).

Medication

The pain of dysmenorrhoea is thought to be linked to increased prostaglandin activity; raised prostaglandin levels have been found in the menstrual fluids and circulating blood of women who suffer from dysmenorrhoea. Therefore, the use of a non-steroidal anti-inflammatory drug (NSAID) that inhibits the synthesis of prostaglandins is logical, provided the patient is not already taking an NSAID.

Women taking combined oral contraceptives (COCs) or *desogestrel* (*DSG*) usually find that the symptoms of dysmenorrhoea are reduced or eliminated altogether, and so any woman presenting with the symptoms of dysmenorrhoea and who is taking these pills is probably best referred to the GP surgery for further investigation (or change of pill).

When to refer

Presence of abnormal vaginal discharge
Abnormal bleeding
Symptoms suggest secondary dysmenorrhoea
Severe intermenstrual pain (mittelschmerz) and bleeding
Failure of medication
Pain with a late period (possibility of an ectopic pregnancy)
Presence of fever

Treatment timescale

If the pain of primary dysmenorrhoea is not improved after two cycles of treatment with an NSAID, referral to the doctor would be advisable.

MANAGEMENT

Simple explanation about why period pains occur, together with sympathy and reassurance, is important. Treatment with NSAIDs is often very effective in dysmenorrhoea and over 70% of women get good relief from symptoms. CKS advice is to offer *paracetamol* if NSAIDs are contraindicated or not tolerated, or in addition to an NSAID, if the response is insufficient.

NSAIDs (*ibuprofen* and *naproxen*) (see also Chapter 5: Painful Conditions)

NSAIDs are considered by CKS as a first-line treatment option (hormonal contraception is another option for women who do not want to conceive) for dysmenorrhoea, provided that they are appropriate for the patient (i.e. you have asked about previous use of *aspirin* and any history of GI problems and asthma). They inhibit the synthesis of prostaglandins and thus have a rationale for use. Most trials have studied the use of NSAIDs at the onset of pain. One small study compared treatment started premenstrually against treatment from onset of pain, and it was found that both strategies were equally effective.

Doses for *ibuprofen* are described in Chapter 5: Painful Conditions. Sustained release formulations of *ibuprofen* are also available. *Naproxen* 250-mg tablets can be sold OTC to women aged between 15 and 50 years for primary dysmenorrhoea only. Two tablets are taken initially and then one tablet 6–8 h later if needed. Maximum daily dose is 750 mg and maximum treatment time is 3 days.

Contraindications

NSAIDs should not be taken by anyone who has or has had a peptic ulcer and all patients should take NSAIDs with or after food to minimise GI problems.

NSAIDs should not be taken by anyone who is sensitive to *aspirin* and should be used with caution in anyone who is asthmatic because such patients are more likely to be sensitive to NSAIDs. The pharmacist can check if a person with asthma has used an NSAID before. If they have done so without problems, they can continue.

Aspirin

Aspirin also inhibits the synthesis of prostaglandins, but it is less effective in relieving the symptoms of dysmenorrhoea compared with *ibuprofen*. It also has the drawback that as an antiplatelet it can make menstrual bleeding heavier. One review found the number needed to treat for pain relief was 10 for *aspirin* compared with 2.4 for *ibuprofen*.

Aspirin can cause GI upsets and is more irritating to the stomach than NSAIDs. For those who experience symptoms of nausea and vomiting with dysmenorrhoea, *aspirin* is probably best avoided. Soluble forms of *aspirin* will work more quickly than traditional tablet formulations and are less likely to cause stomach problems. Patients should be advised to take *aspirin* with or after meals. The pharmacist should establish whether the patient has any history of *aspirin* sensitivity before recommending the drug.

Paracetamol

Paracetamol has little or no effect on the levels of prostaglandins involved in pain and inflammation; therefore, it is theoretically less effective in the treatment of dysmenorrhoea than NSAIDs. However, it is a useful treatment when the patient cannot take NSAIDs or *aspirin*. It is also useful when the patient is suffering with nausea and vomiting, as well as pain, since it does not irritate the stomach.

Hyoscine

Hyoscine butylbromide, a smooth muscle relaxant, is marketed for the treatment of dysmenorrhoea on the theoretical basis that the antispasmodic action will reduce cramping. In fact, the dose is so low (0.1-mg *hyoscine*) that such an effect is unlikely. The anticholinergic/antimuscarinic effects of *hyoscine* mean that it is contraindicated in women with closed-angle glaucoma. Additive anticholinergic/antimuscarinic effects (dry mouth, constipation and blurred vision) mean that *hyoscine* is best avoided if any other drug with anticholinergic/antimuscarinic effects (e.g. tricyclic antidepressants) is being taken.

PRACTICAL POINTS

Non-drug treatments

Although exercise might seem unattractive with period pain, keeping active can help to reduce pain, probably by raising endorphin levels and promoting a feeling of well-being. Gentle swimming, walking, cycling, yoga and Pilates may help.

Transcutaneous electrical nerve stimulation (TENS) machines cannot be prescribed on the NHS but can be purchased OTC, and these have been used for painful periods. A systematic review of evidence found that high-frequency TENS may be of benefit. It seems to work by altering the body's ability to receive or perceive pain signals.

Locally applied low-level heat may also help pain relief. Putting a heat pad or hot water bottle (wrapped in a tea towel) on the abdomen may help reduce pain. Results from one study showed that the addition of TENS to *ibuprofen* significantly reduced time to noticeable pain relief compared with *ibuprofen* alone. Warm baths or showers may help relieve pain and help with relaxation.

Advice for women taking analgesics

(i) Take the first dose as soon as your pain begins or as soon as the bleeding starts, whichever comes first. If this is not adequate, try starting the tablets on the day before your period is due. This may prevent the pain from building up.

(ii) Take the tablets regularly, for 2–3 days each period, rather than 'now and then' when pain builds up.

(iii) Take a strong enough dose. If your pains are not eased at the maximum recommended dose, changing the type of NSAID may help. Adding *paracetamol* can also help.

(iv) Side effects are uncommon if you take an anti-inflammatory for just a few days at a time, during each period. (However, it is suggested to read the leaflet that comes with the tablets for a full list of possible side effects.)

(v) If indigestion or upper abdominal pain occurs with an NSAID, stop taking it and discuss with your doctor. Sometimes, other tablets, such as proton pump inhibitors, can be added to an NSAID to reduce this side effect.

Dysmenorrhoea in practice

Case 1

Linda Bailey is a young woman aged in her mid-20s, who asks your advice about painful periods that started a few months ago. From your questioning, you find that Linda has lower abdominal pain and sometimes backache, which starts several days before her period begins. Her menstrual cycle used to be very regular but now tends to vary; sometimes, she has only 3 weeks between periods. The pain continues throughout menstruation and is quite severe. She has tried taking *aspirin*, which did not have much effect.

The pharmacist's view

This sounds like secondary dysmenorrhoea. The pain begins well before her period starts and continues during menstruation. Her periods, which used to be regular and relatively painless, are no longer so, and she has tried *aspirin*, which has not relieved the pain. She should be referred to her doctor.

The doctor's view

Referral is appropriate in this situation. Further information needs to be gathered from history taking (how long overall she has experienced pain and what it is like, the effect on her life, any pregnancies, whether she uses contraception, any history of pelvic infection, her concerns and ideas about her problem, the sort of help she is expecting, etc.), examination and preliminary investigations. It is quite possible that the patient has endometriosis and referral to a gynaecologist may be indicated. The diagnosis of endometriosis can usually be confirmed by a laparoscopy. The range of treatment options includes other NSAIDs, hormone treatments and surgery. The hormone treatments that can be used are progestogens, antiprogestogens, COCs and gonadotropin-releasing hormone (GnRH) analogues. GnRH preparations, such as *goserelin*, work by suppressing the hormones to create an artificial menopause. They can be used for up to 6 months (not to be repeated) and may have to be used with hormone replacement therapy (HRT) to offset menopausal-like symptoms.

Case 2

Sofia Frischer is a young woman aged about 18 years who looks rather embarrassed and asks you what would be the best thing for period pains. Sofia tells you that she started her periods about 3 years ago and has not had any significant problems with period pains until about a year ago. Her periods are regular – every 4 weeks. They have not become heavier, but she now gets pain, which starts a few hours before her period. The pain is usually gone by the end of the first day of menstruation, and Sofia has never had any pain during other parts of the cycle. She says she has not tried any medicine yet, is not taking any medicines from the doctor and can normally take *aspirin* without any problems.

The pharmacist's view

From the results of questioning, it sounds as though Sofia is suffering from straightforward primary dysmenorrhoea. She could be advised to take an NSAID, such as *ibuprofen*, which she can buy, and follow this regimen for 2 months and be invited back to see if the treatment has worked.

The doctor's view

Sofia's pain is most likely due to primary dysmenorrhoea. An explanation of this fact would probably be very reassuring. The treatment recommended by the pharmacist is sensible. If her pain was not helped by an NSAID, she could be advised to discuss further management with her GP. Sometimes, the COC pill can be helpful in reducing painful periods.

PREMENSTRUAL SYNDROME

The term premenstrual syndrome (PMS) describes a collection of physical, psychological and behavioural symptoms that are experienced cyclically, usually from 2 to 14 days before the start of menstruation. Relief from symptoms generally occurs once menstrual bleeding begins. The cyclical nature, timing and reduction in symptoms are all important in identifying PMS. Some women experience such severe symptoms that their working and home lives are affected.

Symptoms

PMS symptoms occur regularly in the absence of organic or underlying psychiatric disease and are summarised in Table 6.2. They usually become most prominent in the week before a menstrual period.

TABLE 6.2 Symptoms of PMS

Physical	Psychological	Behavioural
Bloating	Depressed mood	Reduced cognitive ability
Breast pain	Mood swings	Aggression
Fatigue	Anxiety	
	Loss of confidence	
	Irritability	

Keeping a symptom diary and determining the relationship to menstruation may help clarify the diagnosis.

Severity

Most women notice some change of mood in the time leading up to a menstrual period; in a small proportion of women (less than 10%), these symptoms are disabling. In mild PMS, symptoms do not interfere with the woman's personal, social and professional life. In moderate PMS, symptoms interfere with the woman's personal, social and professional life. Daily functioning may be affected but not severely. In severe PMS, the woman withdraws from social and professional activities and cannot function normally.

MANAGEMENT

Perhaps the most important thing a pharmacist can contribute is to provide reassurance to the patient that you understand her concerns and the disruption that symptoms are causing to her life. CKS recommends offering lifestyle advice and complementary treatments and/or dietary supplements, a simple analgesic for pain (if required) and patient information on PMS (e.g. the Royal College of Obstetricians and Gynaecologists patient information leaflet at `https://bit.ly/3D1NvMj`). Table 6.3 summarises lifestyle advice.

The effectiveness of treatments of the symptoms of PMS is a matter of debate, and there is a high placebo response to various therapies in mood changes, breast discomfort and headaches when taken from 2 weeks before the period starts or throughout the cycle.

For more severe cases, doctors may prescribe third-generation COCs, which are thought to reduce symptoms of PMS. These are often used continuously rather than cyclically. Sometimes, SSRI antidepressants, such as *fluoxetine*, are prescribed, which appear to reduce mood swings. Talking therapies, such as cognitive behavioural therapy (CBT), may also be helpful.

TABLE 6.3 Advice for women experiencing PMS

Lifestyle area	Advice
Diet	Regular, frequent (2–3 hourly), small, balanced meals rich in complex carbohydrates to reduce symptoms of bloating
Exercise	Regular physical activity
Smoking cessation	
Alcohol	Restriction in alcohol intake can improve sleep
Sleep	See Chapter 11: Insomnia and Mental Well-Being later in this book
Stress	Mindfulness and meditation; yoga

Complementary therapies and dietary supplements

Many herbal and dietary supplements are said to improve symptoms of PMS, but evidence of benefit is limited for vitamin B6, evening primrose oil, calcium and vitamin D, magnesium and ginkgo biloba. If the patient wishes to try a supplement, you should provide information about dosage, safety and the limited state of the clinical evidence.

There is some evidence that *pyridoxine* (*vitamin B6*) may reduce symptoms, but the quality of clinical trials is poor and the evidence thus not definitive. The mechanism by which *pyridoxine* might work in PMS is unknown. It has been used extensively in the past and it may be that it has a placebo effect. If patient wishes to try it, advise them to stick to the recommended dose as higher doses of *pyridoxine* are reported to have led to neuropathy. The *British National Formulary* (*BNF*) states that 'prolonged use of *pyridoxine* in a dose of 10 mg daily is considered safe but the long-term use of *pyridoxine* in a dose of 200 mg or more daily has been associated with neuropathy. The safety of long-term *pyridoxine* supplementation with doses above 10 mg daily has not been established'.

Evening primrose oil has been used for many years to treat the breast tenderness associated with PMS. There are no good-quality trials to support its use and therefore it is of unknown effectiveness. It is unlikely to do harm. The mechanism of action of *evening primrose oil* is said to be linked to effects on prostaglandins, particularly in increasing the level of prostaglandin E, which appears to be depleted in some women with PMS. The active component of *evening primrose oil* is gamma--linolenic (gamolenic) acid, which is thought to reduce the ratio of saturated to unsaturated fatty acids. The response to hormones and prolactin appears to be reduced by gamma-linolenic acid.

A 2020 systematic review concluded that calcium supplementation could improve the symptoms of PMS, but that the appropriate dosage has yet to be established. Calcium may cause constipation; interfere with the absorption of medications, vitamins and minerals; and contribute to kidney stones (see Chapter 3: Gastrointestinal Tract Problems: Antacids). Supplementation with magnesium and vitamin D may also reduce symptoms of PMS, but better-quality studies are needed to provide definitive evidence.

Evidence to support the use of complementary treatments, including reflexology and acupuncture, is also limited.

MENORRHAGIA

Menorrhagia is excessive (heavy) menstrual blood loss, which occurs over several consecutive cycles. It can be treated by the pharmacist OTC with *tranexamic acid*, and NSAIDS also have a role. One in three women describes periods as being 'heavy' and heavy menstrual blood loss is that, which in the woman's view, interferes with her quality of life (including physical, emotional and social). Discussing menstrual problems is potentially embarrassing for the patient so should be done in private in a consultation room. The terms heavy menstrual loss and periods are preferable to menorrhagia when talking with the patient. In most cases, where women present with symptoms of menorrhagia, there is no underlying pathology. Careful history taking will support the decisions about whether to treat or refer.

What you need to know

Age
Heaviness
Menstrual cycle – length, number of days of menstruation
Symptoms – bleeding pattern; impact on quality of life
Duration – how long have the periods been heavy?
Previous history – previous nature of periods

Significance of questions and answers

Age

Most patients presenting with menorrhagia are aged over 30. The commonest causes of heavy periods in women aged under 30 are an intrauterine device (IUD) (coil) or anovulatory cycles (where menstrual periods are not at regular intervals).

Heaviness

It is important to establish if menstrual loss is greater than the woman feels she can reasonably manage. It is worth asking how often the patient has to change sanitary protection (towels or tampons). If the patient has to wear tampons and towels simultaneously because flow is heavy; this is called ‘flooding’ and can lead to blood-stained clothes. The passage of clots also represents heavy flow. Clots may be painful as they pass through the cervix. Also, ascertain the effect on personal life, including any time off work. If these symptoms are severe, the patient should be referred to the GP.

Establish any relevant past medical problems, including clotting disorders, thyroid status and gynaecological history. Check if the patient looks pale or has symptoms of anaemia, particularly tiredness, weakness or dizziness. Platelet abnormality may cause easy bruising or bleeding gums. Thyroid disorders (hypothyroidism) can cause menorrhagia. If anaemia, clotting disorders or thyroid problems are suspected, the patient should see the GP.

Menstrual cycle

A normal cycle is between 21 and 35 days in duration and with no more than 3 days’ variation in the length of individual cycles. The first day of a period is counted as the first day of the menstrual cycle. A period normally lasts 2–7 days, with the average period being 5 days long. If a patient’s period was previously regular and this has changed, pathology should be ruled out and referral is indicated.

Other symptoms

Specific questions can check for the presence of other symptoms that may suggest an underlying condition:

- Fibroids – dysmenorrhoea, pelvic pain
- Endometriosis – dysmenorrhoea, pain on intercourse (dyspareunia), pelvic pain
- PID/pelvic infection – fever, vaginal discharge, pelvic pain, intermenstrual and/or post-coital pain
- Endometrial cancer – post-coital bleeding, intermenstrual bleeding, pelvic pain

Duration

If the periods have been heavy over several months or more, then blood loss may have given rise to iron deficiency anaemia. A referral may be indicated for assessment and blood tests.

Previous history

Determining if this has developed gradually or is of recent onset may give clues to the cause. If of recent or sudden onset, referral may be more appropriate than attempting to treat.

When to refer

Very heavy periods – clots or 'flooding'
Irregular periods
Anaemia suspected
Symptoms suggesting clotting disorder
Anticoagulants or antiplatelets
Presence of abnormal vaginal discharge
Intermenstrual and/or post-coital bleeding
Pelvic pain
Pain on intercourse (dyspareunia)
Presence of fever

Treatment timescale

If menorrhagia is not improved after three cycles of treatment, referral to the doctor would be advisable.

MANAGEMENT

There is one treatment licensed OTC, which is *tranexamic acid*. The use of NSAIDs for dysmenorrhoea may also help reduce menstrual loss.

Tranexamic acid

Oral *tranexamic acid* reduces the volume of menstrual blood loss by about half through its antifibrinolytic effect, which increases blood clotting. It can be used in women aged 18–45 years whose cycle is regular (21–35-day cycles with no more than 3 days variation in the length of individual cycles). The treatment can be taken for up to 4 days per cycle, starting on the first day of the period. The usual dose is 1 g (2 × 500-mg tablets), taken three times a day; this can be increased to four times a day if the bleeding is particularly heavy (maximum daily dose is 4 g).

Contraindications

Tranexamic acid should not be taken by women with current or previous thromboembolic disease, those with a family history of such problems and those taking anticoagulants or oral contraception. Excretion of *tranexamic acid* is almost exclusively by the kidneys; therefore, the treatment is not advised for women with mild-to-moderate renal insufficiency. Haematuria (blood in the urine) from upper urinary tract pathology is a contraindication because a blood clot may cause obstruction in the ureter.

An unusual cause of menorrhagia is endometrial cancer. This is usually associated with irregular periods, prolonged periods or abnormal bleeding between periods. Risk factors for endometrial cancer include obesity, diabetes, family history, polycystic ovary syndrome, unopposed oestrogen treatment or *tamoxifen*. OTC *tranexamic acid* is not recommended in these circumstances. If there is any concern about this possibility, the patient should see the doctor.

Cautions

Breastfeeding women should only take *tranexamic acid* on the advice of their doctor because the drug passes into breast milk.

Side effects

Nausea, vomiting and diarrhoea may occur; reducing the dose may help. Any patient who experiences visual disturbances while taking *tranexamic acid* should be referred to the doctor.

Other advice

There is no evidence that menorrhagia can be reduced by exercise or dietary changes.

MENOPAUSE

Menopause is when a woman stops menstruating permanently due to the loss of ovarian follicular activity and is diagnosed after a woman has had 12 months without periods (amenorrhoea), typically between 45 and 55 years of age. It is preceded by perimenopause when the ovaries gradually stop functioning; oestrogen and progesterone levels fall and women experience changing and irregular menstrual cycles. Hot flushes and night sweats (vasomotor symptoms [VMS]) are the most commonly reported symptoms, which are experienced by up to 80% of women, and urogenital symptoms occur in around 40%. Symptoms can have a profound adverse effect on well-being and quality of life. Around 1 in 10 women has an early menopause between 40 and 45 years of age. Lifestyle measures can help many symptoms, and vaginal oestrogen is effective in treating vaginal and urinary symptoms. As oestrogen levels decline, the risk of osteoporosis and fragility fractures increases. Consultations about menopause and associated symptoms will cover sensitive information and use of the pharmacy's consultation area is important.

What you need to know

Age
Periods
Symptoms
  Hot flushes and night sweats
  Urogenital
  Altered sexual function
  Musculoskeletal
  Sleep disturbance and fatigue
  Mood disorders
  Hair changes
Medication
Contraception
Lifestyle factors

Significance of questions and answers

Age

The average age of menopause diagnosis in the UK is 51 years; however, in around 10% of women, menopause occurs early between 40 and 45 years of age. Some may start to experience symptoms from their late 30s onwards. Menopause before the age of 40 years is categorised as premature ovarian insufficiency and occurs in around 4% of women.

Periods

Most women experience irregularities to the menstrual cycle in the years leading up to menopause, which may last for up to 4 years. The cycle may shorten to 2–3 weeks or lengthen with many weeks or even months between periods. Only about 1 in 10 women's periods will stop abruptly. Perimenopause is usually diagnosed based on irregular periods and the presence of VMS, such as hot flushes.

Symptoms

Menopausal symptoms typically last for 5–7 years, but some women continue to experience them for up to 15 years. You need to ask about symptoms, nature, frequency, duration, time of day, and about severity and impact on quality of life.

Hot flushes and night sweats

VMS are the most commonly experienced menopausal symptoms, affecting 80% of women. Together with irregular periods, they may be the first sign of perimenopause. Hot flushes are often described as a sudden sensation of heat in the chest, face and head followed by flushing, perspiration and sometimes chills. Headaches and palpitations are other VMS.

Urogenital symptoms

Urinary and genital symptoms are reported by 40% of women, resulting from the effects of diminishing oestrogen levels, which cause thinning and shrinking of the tissues of the vulva, vagina, urethra and bladder. Multiple symptoms can result, including vaginal dryness, vaginal irritation, urinary symptoms, including a frequent need to urinate, and UTIs. Loss of oestrogen changes the urethral and vaginal bacterial flora, resulting in a higher (more alkaline) pH, both predisposing to infection. As women age, a loss of muscular tone of the pelvic floor muscles together with thinning of vaginal and urethral tissue can lead to urinary incontinence. There may be insufficient vaginal secretions for comfortable sexual activity so pain on intercourse (dyspareunia) may be experienced. Vaginal dryness tends to increase in severity with time since menopause as the ovaries gradually stop functioning.

Musculoskeletal symptoms

Joint, bone and muscle pain may be experienced.

Altered sexual function

Some women experience lower libido (sex drive) during and after perimenopause. Vaginal dryness leading to pain during intercourse may further reduce libido. Sex drive can also be lowered by the diminishing levels of oestrogen and testosterone being produced. Some women experience higher libido once they no longer need to use contraception and are no longer worried about the risk of pregnancy.

Sleep disturbance and fatigue

Night sweats cause disturbed sleep, leading to fatigue during the day and difficulty in concentrating on tasks at work or home.

Mood disorders

Women may experience loss of confidence, low mood, irritability, forgetfulness, difficulty in concentrating, panic attacks, anxiety and depression.

Hair changes

Many women notice that their hair grows more slowly and becomes thinner; this can be distressing.

Medication

Some medicines can exacerbate menopausal symptoms. Hot flushes can be related to drugs that affect vascular reactivity, such as some antihypertensives, and to SSRIs when prescribed at high doses.

You need to ask about any medicines or herbal remedies already tried to treat the menopausal symptoms.

Contraception

Fertility declines during perimenopause and pregnancy is unlikely, but still possible. A woman is potentially fertile for 2 years after her last menstrual period if she is younger than 50 years of age, and for 1 year if she is over 50 years of age. In general, all women can stop contraception at the age of 55 years.

Lifestyle factors

Ask about smoking, alcohol consumption, exercise and nutrition. Observational studies have found that women with either higher BMI or a greater percentage body fat report more frequent or severe VMS. Studies do not show a clear link between menopause itself and weight gain, although many women attribute weight gain to 'the change'. Smoking is associated with earlier menopause and smokers have more vaginal dryness than non-smokers after menopause.

When to refer

Unexplained bleeding
VMS if the woman wants to discuss trying HRT
Suspected depression
Significant urogenital symptoms

MANAGEMENT

Lifestyle measures

There is a lack of high-quality, consistent evidence of specific benefit of many lifestyle measures for VMS. There is some evidence that hot flushes and night sweats can be helped by weight loss (if applicable), by stopping smoking and by exercising regularly. Practical measures, such as wearing lighter clothing and/or dressing in layers, turning down central heating, sleeping in a cooler room and using fans, may help. Using relaxation and breathing techniques, such as paced relaxed breathing, may help with VMS and some other symptoms. Some women find that symptoms are triggered by spicy foods, caffeine and alcohol. Again, the evidence here is not definitive, but it may be worth avoiding suspected triggers one at a time to assess their effects. Exercise can reduce stress, anxiety and likelihood of depression.

Vaginal moisturisers and lubricants

Vaginal moisturisers can be used at least twice weekly. Vaginal lubricants are used at the time of intercourse if there are insufficient vaginal secretions for comfortable sexual activity. Vaginal moisturisers and lubricants can be used alone or in addition to vaginal oestrogen preparations.

Vaginal oestrogen

Low-dose vaginal oestrogen is recommended as first-line treatment by NICE for vaginal and urinary symptoms, and treatment can be continued for as long as needed to relieve symptoms. A vaginal tablet containing the equivalent of 10 micrograms of oestradiol can be used to treat vaginal atrophy caused by oestrogen deficiency in menopause. In the UK, the Commission on Human Medicines (CHM), part of the Medicines and Healthcare products Regulatory Agency has advised that this can be reclassified from a prescription only medicine (POM) to one that can be sold under the supervision of a pharmacist (P). Local oestrogens are initially used every day for the first 2 weeks of treatment after which they are used twice a week. The tablet is inserted into the vagina using an applicator until resistance is met (8–10 cm). If a tablet is missed, it should be inserted as soon as the woman remembers. A double dose should not be used.

Treatment should ideally be started early before irreversible changes have occurred and needs to be continued to maintain benefits; otherwise, when treatment is stopped, symptoms often return. A progestogen is not needed for endometrial protection, as systemic absorption of vaginal oestrogen is minimal. Vaginal oestrogen can be used together with HRT if needed.

If it is less than 12 months since the woman's last menstrual period or she is under the age of 50 years, she may still need to use additional contraception to prevent pregnancy. There is no evidence of damage to latex condoms and diaphragms.

The most common side effects are headache, abdominal pain and vaginal discharge, discomfort or bleeding (spotting or breakthrough bleeding). Unexplained vaginal bleeding would be a reason for referral. If a low-dose OTC preparation does not relieve symptoms sufficiently, referral can be made for a higher-dose preparation to be prescribed.

The following are contraindications to use of vaginal oestrogen:

- Known, past or suspected breast cancer
- Known, past or suspected oestrogen-dependent malignant tumours (e.g. endometrial cancer)
- Undiagnosed genital bleeding
- Untreated endometrial hyperplasia
- Previous or current venous thromboembolism (deep venous thrombosis, pulmonary embolism)
- Known thrombophilic disorders (e.g. protein C, protein S or antithrombin deficiency
- Active or recent arterial thromboembolic disease (e.g. angina and myocardial infarction)
- Acute liver disease, or a history of liver disease as long as liver function tests have failed to return to normal
- Known hypersensitivity to the active substances or to any of the excipients
- Porphyria

Cognitive behavioural therapy

NICE advises that CBT can be considered for low mood and anxiety (see Chapter 11: Insomnia and Mental Well-Being).

Relaxation techniques

Breathing exercises and structured relaxation may be helpful (see Chapter 11: Insomnia and Mental Well-Being).

Sleep hygiene

Disturbed sleep patterns may be helped by sleep hygiene (see Chapter 11: Insomnia and Mental Well-Being).

Complementary therapies

There is some evidence that black cohosh, isoflavones (in red clover) and *St John's wort* may relieve VMS, but the constituents, quality, purity and safety of the products may not be known, and different preparations may vary. There are potential drug-to-drug interactions between *St John's wort* and *tamoxifen*, anticoagulants and anticonvulsants. Black cohosh may inhibit CYP3A4 and therefore might interact and potentially increase the risk of adverse effects with drugs metabolised by this enzyme. Some complementary therapies, such as red clover, contain constituents with oestrogen-like properties (phytoestrogens), and they are also found in food, such as soya. There are many studies looking at the effectiveness of these food substances, but the results are variable and generally show little value. They are not recommended in patients with breast cancer.

A systematic review of the use of acupuncture did not find it effective in reducing hot flushes.

PRACTICAL POINTS

Contraception – when to stop

Contraception should be continued for 2 years after the last menstrual period in women younger than 50 years of age, and for 1 year if over 50 years of age. In general, all women can stop contraception at the age of 55 years.

The pill

Combined hormonal contraception can be used in eligible women under 50 years of age as an alternative to HRT for relief from menopausal symptoms and prevention of loss of bone mineral density. Women should be advised to switch to a progestogen-only method of contraception at 50 years of age, if needed. They can continue to take this alongside cyclical HRT.

Hormone replacement therapy

Systemic oestrogen therapy (HRT) is the most effective treatment for the relief of menopausal hot flushes and night sweats (VSM) and if these are the most troublesome symptoms you can suggest referral to the patient's primary care practice. Some women on systemic HRT may also benefit from additional low-dose vaginal oestrogen. Progestogens are always given alongside systemic oestrogen therapy in women who have a uterus (those who have not had a hysterectomy) to protect the endometrium; oestrogen given without progestogen for 'protection' can cause endometrial cancer.

Bone health

Postmenopausal women are at greater risk of osteoporosis and fragility fracture. General advice on regular exercise (tailored to the person) to improve muscle strength helps to reduce this risk. Encourage walking, especially outdoors, as this will increase exposure to sunlight and increase vitamin D production. Regular consumption of vitamin D supplements, particularly during winter months, is recommended. Advise on a balanced diet as this may improve bone health. Stopping smoking is important as it is a risk factor for fragility fracture. Alcohol is a dose-dependent risk factor for fragility fracture so moderation in alcohol will also be of benefit.

Bioidentical hormones

Bioidentical or 'body identical' hormones are offered by private clinics in a mix of plant-derived oestrogens, often together with progesterone and testosterone in quantities based on the results of saliva and/or blood tests. They are formulated as creams, lozenges and vaginal preparations. NICE states 'the efficacy and safety of unregulated compounded bioidentical hormones are unknown' as they are not subject to the usual regulatory processes for medicines.

Sources of information about menopause

Following is a list of organisations with their websites (accessed 21 February 2022) for information about menopause:

- Rock My Menopause (`www.rockmymenopause.com`) has a variety of factsheets and podcasts on various aspects of menopause.
- Menopause Matters (`www.menopausematters.co.uk`) provides information on menopause, menopausal symptoms and treatment options.
- Women's Health Concern (the patient arm of the British Menopause Society; `www.womens-health-concern.org`) has a range of factsheets and an email advice service.
- The Royal College of Obstetricians and Gynaecologists (`www.rcog.org.uk`) has various patient leaflets in the section 'Menopause and women's health in later life'.
- The Daisy Network (`www.daisynetwork.org`) is a nationwide support group for women diagnosed with premature ovarian insufficiency or premature menopause.

Menopausal symptoms in practice

Patient perspective

One night, I woke up at exactly 4 am boiling hot. It was just as if my internal thermostat had broken, in an instant. From then on, for the next 6 years the heat would come over me with no warning. Like a whoosh, like a flare, like a furnace. I found myself moody, snappish and easily upset. The joint pain in my ankles and hips hurt so badly that it was hard to walk in the mornings. It was like I was a completely different person. All of the night sweats, anxiety, I was crying – I could not stop crying. Sometimes, when I was having a hot flush I would need 10 or 15 min before I could face anyone. Going out on the wards was awful – I would be dripping with sweat, I could not go and see patients like that. My periods went haywire. Heavy, light, late, early, you name it, it happened.

Case study 1

Alex Shah is a 54-year-old woman who asks for 'a quiet word with the pharmacist'. You invite her into the consultation room and she tells you that she has been having a few symptoms 'down below' for a while and had been hoping that they would go away. However, she is now fed up and wants to know if there is any treatment she can buy OTC. You explain that you will need to ask questions and that some of these will seem quite personal but that they are important in deciding whether she might need to see someone at her GP practice. Her periods stopped completely 2 years ago and she has had no bleeding or spotting since then. The most troublesome symptoms are vaginal dryness and soreness, which are making sex very painful. She has needed to get up two to three times during the night to go to the toilet for quite a while and has got used to this, but she is sick of often feeling like she needs to pass urine and worrying that she might not get to the toilet in time. This has made her avoid going for long walks, which she used to love. She thinks that this is why she has put on weight. She says she feels better just for being able to talk to you about these problems, which she finds embarrassing and that have been making her feel lonely. She has some hot flushes, but these are not affecting her life in the same way as the other symptoms. She deals with them by trying to dress in layers, having a fan at work and home, and having a lighter duvet on her side of the bed. She is not taking any prescribed medicines and has not tried anything to treat her symptoms. She has no history of cancer or endometriosis.

The pharmacist's view

Alex is describing a picture of urogenital symptoms and VMS that is typical of oestrogen deficiency resulting from the shutdown of ovarian function during the menopause. She has been tolerating her urogenital symptoms, but she has now reached the point where she wants treatment. I would suggest a trial with vaginal oestrogen for a few weeks, tell her that she should see some improvement after 2–3 weeks and ask her to let me know how things go. I would also ask if she uses a lubricant for sex and if so whether she is happy with the one she uses. If she did not want to try vaginal oestrogen, I would have suggested using a vaginal moisturising product at least twice a week for at least 4 weeks and returning to see me if the symptoms did not improve.

The nurse practitioner's view

The pharmacist has handled this very well and Alex has been given sound advice. Women can find menopausal symptoms, such as those described here, very embarrassing. We run a well-woman clinic at our surgery and often encounter these problems. Regarding the use of vaginal lubricants/moisturisers, these may be helpful and also a trial of vaginal oestrogen is warranted and it should reduce vaginal dryness and improve the urinary symptoms. If this is not giving enough symptom relief, I would consider adding in oral or transdermal HRT as long as there are no contraindications, and Alex is happy to take it.

Besides this, I would give her advice on getting plenty of exercise and maintaining a healthy diet. It is helpful to give her information leaflets and suggest various information sources available on the Internet. It is important to advise her which information sources and websites are most reliable and to avoid some of the 'dodgy' ones!

Case study 2

Ellie Devlin has come into your pharmacy to ask if she can buy a herbal remedy to treat her symptoms. When you ask her which problems she wants to treat, she tells you that she is having hot flushes both day and night. You invite her into the consultation room and explain that you will need to ask questions and that some of these will seem quite personal, but that they are important in deciding whether she might need to see someone at her GP practice. She is OK with this and in response to your questions tells you that she is 42 years old and that about 6 months ago she started with hot flushes, and they seem to have got worse. Even when the weather got cold, they were still a problem, and she finds that she needs to wear short sleeves all the time. At night, she wakes up two or three times 'dripping with sweat' and when she wakes up in the morning, she feels completely drained and finds herself snapping at her teenage children and husband over minor things. Work is a nightmare as she works as a receptionist in a solicitor's office and has to have meetings with staff and clients. She often feels a hot flush starting and dreads the thought that she might start flushing and running with sweat in front of them. Ellie smokes about 15 cigarettes a day and has gradually cut down from over 20 cigarettes a day in the last year. Her periods have always been irregular and have got even worse recently. She wants to try a herbal remedy because she does not like what she has heard and read about HRT, especially as she had a cervical cancer scare a few years ago.

The pharmacist's view

I think Ellie is in early menopause, which happens in around 10% of women. This is more common in women who are cigarette smokers. I would discuss with her whether herbal remedies are suitable, and advise that they are unlikely to help and would try to steer her towards seeing a doctor. My main concern is that she is at increased risk of osteoporosis because of early menopause. There is also a concern that she might be at greater risk of cardiovascular disease. I would advise her that that she needs to seek a medical opinion as her condition will need treatment and to either see the practice nurse or GP. Stopping smoking is important and I would offer to help her with smoking cessation.

The general practitioner's view

The pharmacist's assessment is correct. To start with I would investigate with blood tests for menopause looking for elevated serum follicle-stimulating hormone (FSH) levels on two blood samples taken 4–6 weeks apart. I would also check her thyroid function tests; one diagnosis that sometimes catches us out is hyperthyroidism, which can cause similar symptoms, including menstrual irregularity. Very rare conditions causing similar symptoms are things like carcinoid tumour or phaeochromocytoma and if tests for the menopause are negative, these possibilities may also need investigating.

Assuming the FSH tests were positive (elevated), I would encourage her to consider HRT. HRT is going to help her with all her symptoms and help to prevent osteoporosis. Another option, which is less suitable for her because she smokes, is the COC pill. She may also need to use contraception and the progestogen-only pill (POP) is an option that she can take at the same time as HRT. In people of her age, HRT is relatively safe, the benefits outweigh the risks and she should consider taking this until the 'average' age of menopause, i.e. around 51 years of age. I would discuss the risks and benefits carefully with her so that she can make an informed choice.

Women who experience premature or early menopause can be at greater risk of depression, anxiety and mood changes. It can be very upsetting for women to experience menopause in their early 40s. Often, this is a time of feelings of loss, sadness and grief. She may need a lot of support and counselling may help. I would inform her of patient support groups, such as the Daisy Network, which help women with premature or early menopause (`www.daisynet.org`).

VAGINAL THRUSH

Vaginal candidiasis (thrush) is a symptomatic inflammation of the vagina and/or vulva caused by a superficial fungal infection with *candida yeast*. Women often seek to buy products for feminine itching, which may be due to this infection, and some may be embarrassed to seek advice or answer what they see as intrusive questions from the pharmacist. Vaginal pessaries, intravaginal creams containing imidazole antifungals and oral *fluconazole* are effective treatments for candida. Before making any recommendation, questions can identify the probable cause of the symptoms. Advertising of these treatments direct to the public has the positive effect of raising awareness of accessible effective treatment and also means that a request for a named product may be made. It is important to confirm that it is appropriate.

What you need to know

- Age
  - Child, adult or older person
- Duration
- Symptoms
  - Itch
  - Soreness
  - Discharge (colour, consistency, odour)
  - Symptoms in partner
  - Dysuria
  - Dyspareunia
  - Threadworms
- Previous history
- Medication

Significance of questions and answers

Age

Vaginal candidiasis (thrush) is common in women of childbearing age, and pregnancy and diabetes are strong predisposing factors. This infection is rare in children and in postmenopausal women because of the different environment in the vagina. In contrast to women of childbearing age, where vaginal pH is generally acidic (low pH) and contains glycogen, which candida feeds on, the vaginal environment of children and postmenopausal women tends to be alkaline (high pH) and does not contain large amounts of glycogen.

Oestrogen, present between adolescence and the menopause, leads to the availability of glycogen in the vagina and also contributes to the development of a protective barrier layer on the walls of the vagina. The lack of oestrogen in children and postmenopausal women means that this protective barrier is not present, with a consequent increased tendency to bacterial (but not fungal) infection.

In the UK, the Commission on Human Medicines (CHM), part of the Medicines and Healthcare products Regulatory Agency, recommends that women under 16 or over 60 years complaining of symptoms of vaginal thrush should be referred to their doctor rather than being treated with OTC products. Child abuse may be the source of vaginal infection in girls, making referral even more important. Vaginal thrush is rare in older women, and other causes of the symptoms need to be excluded.

Duration

Some women delay seeking advice from the pharmacist or doctor because of embarrassment about their symptoms or while they try an OTC product (see the 'Medication' section further in this chapter).

Symptoms

Itch (pruritus) and soreness

Allergic or irritant dermatitis may be responsible for vaginal itch. It is worth asking whether the patient has recently used any new toiletries (e.g. soaps and bath or shower products). Vaginal deodorants are sometimes the source of allergic reactions. Regular washing with warm water is all that is required to keep the vagina clean and maintain a healthy vaginal environment. The itch associated with thrush is often intense and burning in nature. Sometimes, the skin may be excoriated and raw from scratching when the itch is severe.

Discharge

In women of childbearing age, the vagina naturally produces a watery discharge, and cervical mucus is also produced, which changes consistency at particular times of the menstrual cycle. Such fluids may be watery or slightly thicker, with no associated unpleasant odour. Some women worry about these natural secretions and think they have an infection.

The most common infective cause of vaginal discharge is candidiasis and may be (but is not always) associated with a discharge. The discharge is classically cream coloured, thick and curdy in appearance but, alternatively, may be thin and rather watery. Other vaginal infections may be responsible for producing discharge, which is markedly different from that caused by thrush. The discharge associated with candida infection does not usually produce an unpleasant odour, in contrast to that produced by bacterial infection. Discharge described as yellow or greenish is more likely to be bacterial in origin, e.g. chlamydia or gonorrhoea. Another common cause, bacterial vaginosis (BV), is characterised by a white/grey watery discharge that has a fishy odour.

Partner's symptoms

Men may be infected with candida without showing any symptoms. Typical symptoms for men are an irritating rash on the penis, particularly on the glans. This must be treated at the same time as vaginal thrush; otherwise, reinfection will occur.

Dysuria (pain on urination)

Dysuria may be present and scratching the skin in response to itching might be responsible, although dysuria may occur without scratching. Sometimes, the pain on passing urine may be mistaken for cystitis by the patient. If a woman complains of cystitis, it is important to ask about other symptoms (see the section 'Cystitis', covered earlier in this chapter). The CHM advises that lower abdominal pain and dysuria are indications for referral because of their possible link with kidney infections.

Dyspareunia (painful intercourse)

Painful intercourse may be associated with infection or a sensitivity reaction where the vulval and vaginal areas are involved.

Threadworms

Occasionally, threadworm infestation can lead to vaginal pruritus and this sometimes occurs in children (see Chapter 10: Childhood Conditions). The patient would also be experiencing anal itching in such a case. The pharmacist should refer girls under the age of 16 years to the doctor if there are vaginal symptoms.

Previous history

Recurrent thrush is a problem for some women, and many recognise that it follows antibiotic treatment (see Medication: *Antibiotics* later in this section). Recurrent infections are defined as 'four or more episodes of symptomatic candida infections annually'. The CHM advice on supplying OTC products for vaginal thrush is that any woman who has experienced more than two attacks of thrush during the previous 6 months should be referred to the doctor. Repeated thrush infections may indicate an underlying problem or altered immunity, and further investigation is needed.

Pregnancy

During pregnancy, almost one in five women will have an episode of vaginal candidiasis. This high incidence has been attributed to hormonal changes with a consequent alteration in the vaginal environment, leading to the presence of increased quantities of glycogen. Any pregnant woman with thrush should be referred to the doctor.

Diabetes

It is thought that candida is able to grow more easily in people with diabetes because of the higher glucose levels in blood and tissues. Sometimes, recurrent vaginal thrush can be a sign of undiagnosed diabetes or, in a patient who has been diagnosed, of poor diabetic control.

Sexually transmitted infections

In the UK, the CHM insists that women who have previously had a STI should not be sold OTC treatments for thrush. The thinking behind this ruling is that with a previous history of STI, the current condition may not be thrush or may include a dual infection with another organism.

Pharmacists may be concerned about how patients will respond to personal questions. However, it should be possible to enquire about previous episodes of these or similar symptoms in a tactful way, e.g. by asking ‘Have you ever had anything like this before?’ and if ‘Yes’, ‘Tell me about the symptoms. Were they exactly the same as this time? Did you need treatment at a clinic?’ and about the partner, ‘Has your partner mentioned any symptoms recently?’.

Oral corticosteroids

Patients taking oral corticosteroids may be at increased risk of candida infection.

Immunocompromised patients

Patients with human immunodeficiency syndrome (HIV) or acquired immunodeficiency syndrome (AIDS) may be prone to recurrent thrush infection because the immune system is unable to combat it. People with leukaemia or lymphoma are also prone to this infection. Patients undergoing cancer chemotherapy are similarly at risk of infection.

Medication

Oral contraceptives

It has been suggested that these are linked to the incidence of vaginal candidiasis; however, oral contraceptives are no longer considered a significant precipitating factor.

Antibiotics

Antibiotics are notorious for causing thrush, and this is one reason they should be avoided unless absolutely necessary. Broad-spectrum antibiotics wipe out the natural bacterial flora (lactobacilli) in the vagina. These organisms keep candida suppressed, and their absence can predispose to candida overgrowth. Some women find that an episode of thrush follows every course of antibiotics they take. The doctor may prescribe an antifungal at the same time as the antibiotic in such cases.

Local anaesthetics

Vaginal pruritus may actually be caused by some of the products used to relieve the symptom. Creams and ointments advertised for 'feminine' itching often contain local anaesthetics – a well-known cause of sensitivity reactions. It is important to check what, if any, treatment the patient has tried before seeking your advice.

When to refer

The UK CHM list for when supply of treatment by the pharmacy is not appropriate can guide referral:

- First occurrence of symptoms
- Known hypersensitivity to imidazoles or other vaginal antifungal products
- Pregnancy or suspected pregnancy
- More than two attacks in the previous 6 months
- Previous history of STI
- Exposure to partner with STI
- Patient under 16 or over 60 years
- Abnormal or irregular vaginal bleeding
- Any bloodstaining of vaginal discharge
- Vulval or vaginal sores, ulcers or blisters
- Associated lower abdominal pain or dysuria
- Adverse effects (redness, irritation or swelling associated with treatment)
- No improvement within 7 days of treatment

MANAGEMENT

Both single-dose intravaginal (*clotrimazole*) and oral imidazole (*fluconazole*) OTC preparations are effective in treating vaginal candidiasis and give 80–95% clinical and mycological cure rates. A Cochrane review found the different types of preparation to be equally effective. Topical preparations may give quicker initial relief from itch or soreness, probably due to the vehicle. They may sometimes exacerbate burning sensations initially, and oral treatment may be preferred if the vulva is very inflamed.

Oral therapies such as *fluconazole* are highly effective, but it may be 12–24 h before symptoms improve. Some women find oral treatment more convenient. Patients find single-dose products particularly convenient, and adherence is higher than with treatments involving several days' use. The patient can be asked whether she prefers a pessary, vaginal cream or oral formulation. Some experts argue that oral antifungals should be reserved for resistant cases. Pharmacists will use their professional judgement together with patient preference in making the decision on treatment.

The pharmacist should make sure that the patient knows how to use the product. An effective way to do this is to show the patient the manufacturer's leaflet instructions. Where external symptoms are also a problem, *clotrimazole* cream can be useful in addition to the intravaginal or oral product. The cream should be applied twice daily, i.e. in the morning and at night.

The imidazoles can cause sensitivity reactions, but these seem to be rare. Oral *fluconazole* interacts with some drugs: anticoagulants, oral sulphonylureas, *ciclosporin* (*cyclosporin*), *phenytoin*, *rifampicin* and *theophylline*. The difference between single-dose *fluconazole* and continuous therapy in relation to interactions is not clear. Theoretically, single-dose use is unlikely to cause problems, but in a small study of women taking *warfarin*, the prothrombin time was increased.

Reported side effects from oral *fluconazole* occur in some 10% of patients and are usually mild and transient. They include nausea, abdominal discomfort, flatulence and diarrhoea. Oral *fluconazole* should not be recommended during pregnancy, where it may affect the foetus, or for nursing mothers because it is excreted in breast milk.

PRACTICAL POINTS

Privacy

It is important to ensure that your conversation with the patient cannot be overheard so your consultation room should be used for privacy. Requests for a named product may be an attempt to avoid discussion. However, a careful response is needed to ensure that the product is appropriate.

Treatment of partner

While expert opinion is that male partners without symptoms should not be treated, this remains an area of debate and it can be considered in cases of recurrent thrush. Symptomatic males with candida balanitis (penile thrush) and whose female partner has vaginal thrush should be treated. *Clotrimazole* cream can be used twice daily on the glans of the penis; it should be applied under the foreskin for 7 days. Oral *fluconazole* can also be used.

Testing kit

A testing kit is available OTC and uses vaginal pH (tested using a swab, which changes colour if pH level is high) together with a checklist of symptoms for the patient to identify a 'probable condition' (thrush or BV). The manufacturers state that the test is less accurate if (i) performed less than 1 day before or after a period, (ii) there are signs that a period has started or there is any vaginal bleeding, (iii) used less than 12 h since sexual intercourse or after using a vaginal douche and (iv) used in postmenopausal women, in whom pH is likely to be elevated.

'Live' yoghurt and probiotics

Live yoghurt contains lactobacilli, which are said to alter the vaginal environment, making it more difficult for candida to grow. It has been suggested that women prone to thrush should regularly eat live yoghurt to increase the level of lactobacilli in the gut. However, data are inconclusive as to the effectiveness of *Lactobacillus*-containing yoghurt, administered either orally or vaginally, in either treating or preventing thrush. Direct application of live yoghurt onto the vulval skin and into the vagina on a tampon has been recommended as a treatment for thrush. This process is messy, and some women have reported stinging on application, which is not surprising if the skin is excoriated and sore. It is otherwise harmless, although evidence of effectiveness is lacking. There is no evidence to support the use of probiotics in relation to vaginal thrush.

Prevention

Thrush thrives in a warm environment. Women who are prone to attacks of thrush may find that avoiding nylon or synthetic fabric underwear and tights and wearing cotton underwear instead may help to prevent future attacks.

The protective lining of the vagina is stripped away by foam baths, soaps and douches, and therefore these are best avoided. Vaginal deodorants can themselves cause allergic reactions and should not be used. If the patient wants to use a soap or cleanser, an unperfumed, mild variety is best.

Since candida can be transferred from the bowel when wiping the anus after a bowel movement, wiping from front to back should help to prevent this.

Practical advice on self-management

- Avoid the following potential predisposing factors:
  - Washing and cleaning the vulval area with soap or shower gels (including those containing perfume and antiseptics, such as tea tree oil), wipes and 'feminine hygiene' products
  - Cleaning the vulval area more than once a day
  - Washing underwear in biological washing powder and using fabric conditioners
  - Vaginal douching
  - Wearing tight-fitting and/or non-absorbent clothing
- Wash the vulval area with an unperfumed soap substitute – this should be used externally and not more than once a day.
- Use a simple emollient to moisturise the vulval area.
- Consider using probiotics (such as live yoghurts) orally or topically to relieve symptoms.

Source: Adapted from CKS guidance.

Vaginal thrush in practice

Case 1

Julie Parker telephones your pharmacy to ask for advice because she thinks she might have thrush. She tells you she did not want to come to the pharmacy as she was concerned that the conversation might be overheard. When you ask why she thinks she may have thrush, she tells you that she was recently prescribed a week's course of *metronidazole*. She had her first baby about 6 months ago and has had some skin irritation following an episiotomy. When she went back to the GP after taking the *metronidazole*, she was prescribed a second course of *metronidazole* plus a course of *amoxicillin* for 1 week and a swab was taken. She did not hear anything further for about 2 weeks until the GP rang her and asked if she had been told the results of the swab (she had not). She was asked to go and collect a prescription from the GP. She has not brought it in yet to be dispensed. She knows it is for a pessary, but is not sure of the name. She has noticed some itchiness 'down below'.

The pharmacist's view

This sort of query is difficult to deal with because the patient does not know what has been prescribed. Access to the list of currently prescribed medicines may be possible, with the patient's consent, if your pharmacy has met the requirements for Summary Care Record (in England) or Emergency Care Record (in Scotland). It sounds as though there may have been a communication problem initially and a delay in the test results being dealt with. I would explain that thrush sometimes happens after a course of antibiotics and that the pessary is likely to cure it. If there was any uncertainty, I would advise Julie to contact her GP or offer to contact them on her behalf and then call her back.

The general practitioner's view

In the absence of clear information, it would probably be best for Julie Parker to go back and see her GP who has already given her two courses of treatment and taken a swab. She needs to find out exactly what the GP has been treating her for and what the swab result is and to be able to explain to her GP what her current symptoms are. *Metronidazole* is often prescribed for BV. It could be that she has also developed thrush especially as she has been taking *amoxicillin*. It is always important for patients to know how and when they can get their results. Often patients understandably assume that if they do not hear from their doctors' surgery, the result is negative or normal. This is potentially dangerous, and it is always important for the person taking laboratory samples to explain clearly how and when the results will be available and agree this with their patient. In this situation, it is also important for the prescriber to explain the rationale for the prescription that has been left for the patient at the surgery.

Case 2

Helen Kubare is a student at the local university. She asks one of your assistants for something to treat thrush and is referred to you. You walk with Helen to a consultation room in the shop. Initially, she is resistant to your involvement, asking why you need to ask all these personal questions. After you have explained that you are required to obtain information before selling these products and that, in any case, you need to be sure that the problem is thrush and not a different infection, she seems happier.

She has not had thrush or any similar symptoms before but described her symptoms to a flatmate who made the diagnosis. The worst symptom is itching, which was particularly severe last night. Helen has noticed small quantities of a cream-coloured discharge. The vulval skin is sore and red. Helen has a boyfriend, but he has not had any symptoms. She is not taking any medicines and does not have any existing illnesses or conditions. Since arriving at the university a few months ago, she has not registered with the university's health centre and has therefore come to the pharmacy hoping to buy a treatment.

The pharmacist's view

The key symptoms of itch and cream-coloured vaginal discharge make thrush the most likely candidate here. Helen has no previous history of the condition, and, unfortunately, the regulations preclude the recommendation of an intravaginal imidazole product or oral *fluconazole* in such a case (for the first occurrence). An imidazole cream would help to ease the itching and soreness of the vulval skin. As her boyfriend is not experiencing symptoms, he does not need treatment. However, because external treatment alone is unlikely to prove effective in eradicating the infection, it would be best for Helen to see a nurse or a doctor.

She would be well advised to register at the university's health centre. She does not necessarily have to see a doctor as often nurses at these centres have considerable experience of managing these problems. You can explain to her that she can seek treatment on a temporary resident basis but that it would be best to get proper medical cover.

The doctor's view

The history is very suggestive of thrush and treatment should include an appropriate intravaginal preparation. However, an STI is also a possibility, so a careful history is necessary. Chlamydia screening should be considered. The case history highlights some of the difficulties in asking personal questions about genitalia and sexual activity. These difficulties are also likely to occur in the doctor's surgery. It is important for the nurse or doctor to carefully explore the patient's ideas, understanding, concerns and preconceptions of her condition. Many nurses and doctors would prescribe without an examination if there is a clear history, and examine and take appropriate microbiology samples only if treatment fails.

DESOGESTREL ORAL CONTRACEPTION

The availability of the *desogestrel* (*DSG)* progestogen-only pill (POP) from pharmacies extends women's choice of supply of effective contraception. Pharmacies in the UK have supplied emergency hormonal contraception (EHC) for more than 20 years. Pharmacists have dealt with numerous requests for EHC and recognise that this and the supply of the *DSG* POP require sensitive interpersonal skills from the pharmacist. Enabling privacy for the consultation is essential, and the presence of a consultation room in almost all pharmacies has improved this.

Desogestrel

The *DSG* 75 microgram POP is available OTC (P) for oral contraception in women of childbearing age, including adolescents. It is taken daily and should be taken at the same time every day. A large body of safety and efficacy evidence indicates that it can be taken from menarche to age 55 with very low risk of serious adverse events and there are few medical contraindications. The *DSG* POP works in two ways: by inhibiting ovulation and by changing the consistency of cervical mucous, thus making it more difficult for sperm to reach the egg.

DSG is thought to be more effective than traditional POPs, such as *norethisterone* and *levonorgestrel*, especially with typical use, because ovulation is suppressed more consistently, and it has a longer 'missed pill window' (12 h rather than 3 h).

It is suitable for women who cannot take the COC pill, patch or ring, because they are overweight, or have a history of blood clots or high blood pressure, or continue to smoke more than 15 cigarettes a day after the age of 35 years. If taken consistently and correctly, it is more than 99% effective. Enabling privacy in consultations is critical, as is the wording of sensitive questions. Pharmacists will be able to build on their experience of supplying emergency contraception in developing their consultation skills for providing *DSG* OTC.

What you need to know

- Age
- Menstrual cycle
  - Possible pregnancy
  - Bleeding between periods or after sex
  - Ectopic pregnancy
- STIs
- Medical history
- Other medicines being taken

Significance of questions and answers

Age

DSG can be taken up to the age of 55 years and is licensed for supply for women of childbearing age.

Menstrual cycle

Possible pregnancy

Available evidence suggests that foetal exposure to normal doses of contraceptive hormones has no adverse impact on pregnancy outcomes or risk of foetal abnormality.

Supply of *DSG* OTC requires checking that pregnancy can be ruled out 'with reasonable certainty'. If it cannot, then *DSG* OTC should not be supplied.

Bleeding between periods or after sex

Undiagnosed vaginal bleeding needs to be medically assessed prior to use of *DSG*.

Ectopic pregnancy

DSG inhibits ovulation; therefore, the risk of ectopic pregnancy is very low. However, it should be noted that vaginal bleeding can be associated with ectopic pregnancy and it is important not to automatically assume that any bleeding is a side effect of *DSG*.

Sexually transmitted infections

STIs can present with irregular bleeding and this may be missed if the assumption is made that *DSG* is the cause of the bleeding.

Medical history

- A small increased risk of breast cancer is known to be associated with combined contraceptive pills, but there is no evidence of a link with any of the POPs. However, the evidence is limited, and an association cannot be excluded. Any association is likely to be of a similar magnitude to combined pills. Any patient with current or past breast cancer or of cancer of the uterus or ovaries should be referred.
- Any woman with active venous thromboembolism or a history of thrombosis would need to be referred.
- Current or past liver impairment are also contraindications for *DSG*.

- Although there is no evidence that the therapeutic regimen in diabetes (type 1 or type 2) needs changing during POP use, there is some evidence that progestogens can decrease glucose tolerance. Therefore, the patient's prescriber should keep an eye on the diabetes during the first months of POP use.
- Pharmacists are not expected to check blood pressure before the first supply or at repeat requests, but it has been suggested that this would be good practice. Uncontrolled hypertension would be a reason for referral.

Other medicines being taken

Enzyme-inducing medicines increase the rate of metabolism of *DSG* so that levels drop and it becomes less effective. Relevant medicines include barbiturates, *carbamazepine*, *phenytoin*, *primidone*, *rifampicin* and possibly also *felbamate*, *griseofulvin*, *oxcarbazepine*, *topiramate*, *rifabutin* and products containing the herbal remedy *St John's wort* (*Hypericum perforatum*). The effect can last for up to 28 days after the enzyme inducer is stopped so an alternative method of contraception needs to be used for that time.

Enzyme inhibitors reduce the metabolism of *DSG* so levels might build up and may result in an increase in adverse events. Relevant medicines include strong CYP3A4 enzyme inhibitors (e.g. *ketoconazole*, *itraconazole* and *clarithromycin*) and moderate CYP3A4 enzyme inhibitors (e.g. *fluconazole*, *diltiazem* and *erythromycin*).

DSG can inhibit *ulipristal acetate*'s action to delay ovulation and *ulipristal acetate* can reduce the effect of *DSG* as it binds strongly to the progesterone receptor. Concomitant use should therefore be avoided. *DSG* should be started/restarted no sooner than 5 days after emergency contraception with *ulipristal acetate*.

DSG may disrupt the metabolism of some medicines (see summary of product characteristics (SmPCs) for information).

When to refer

Patient prefers other form of contraception
If the patient may be pregnant
Patient does not want her periods to change
Undiagnosed bleeding between periods or after sex
Suspected ectopic pregnancy
Diabetes
Poorly controlled hypertension
Suspected deep vein thrombosis

History of arterial disease, heart disease or has had a stroke
Liver disease
Current or past breast, uterine or ovarian cancer
Taking other medicines that may affect efficacy of *DSG*

MANAGEMENT

Advising on all regular contraception options

It is important that patients are aware of all their available contraception options; *DSG* is one of many. The range of options is highlighted in Box 6.1. Patients should choose the one which they feel is most suitable, which is partly dependent on how important contraception success is to them and their circumstances. They may wish to discuss this further with family planning services or their GP practice.

Taking desogestrel

DSG is available in 75 microgram tablets. When used OTC, it is intended to be started on day 1 of the menstrual cycle to provide immediate contraceptive protection. If started on days 2–5, additional contraceptive precautions are required for the next 7 days. It is taken without a break between packs.

Box 6.1 Choices of regular contraception

Male and female sterilisation	Permanent method
Progestogen-only implant	Long-lasting method (3 years)
Hormone-containing coil (intrauterine system – IUS)	Long-lasting method (5 years)
Copper coil (Cu-IUCD)	Long-lasting method (5–10 years)
Progestogen-only injectable	Long-lasting method (8–13 weeks)
COC pill, transdermal patch or vaginal ring	Daily method (pill); weekly or monthly method
POP	Daily method (pill)
Male and female condoms	With every episode of sex
Female diaphragm	With every episode of sex
Natural family planning	Avoid sex during fertile time

Guidance on starting after other forms of contraception, and after pregnancy, is provided on the Patient Information Leaflet for the product. It is important that this leaflet is carefully reviewed with the patient when *DSG* is supplied.

The dose is one tablet to be taken every day, ideally at the same time but within 12 h of the same time. If a woman is more than 12 h late, the pill is considered 'missed' and contraceptive efficacy may be reduced.

OTC provision, for women 18 years and older, can be for 3 months (3 × 28) at the initial consultation, then 12 months (12 × 28) at a repeat supply. For women under 18 years, only 3 months' supply (3 × 28) can be made at a time.

DSG is well tolerated. A summary of side effects is shown in the following table; the most common side effect is irregular bleeding, which usually settles within 3 months. Side effects are most likely to occur during the early months of taking *DSG*, and these usually improve over time and should stop within a few months.

Side effects of *DSG* oral contraception

	Common	**Rare**
Short term	Irregular bleeding (<3 months) Acne/spotty skin Breast tenderness Nausea/vomiting/stomach upset Weight change Headaches Change in sex drive (libido) or mood	
Long term	Periods may be irregular, lighter, heavier, more frequent *or* may stop altogether	Some women may develop small fluid-filled cysts on their ovaries

PRACTICAL POINTS

Missed pills

- If less than 12 h late, the missed pill should be taken (this may mean taking two pills in the same day) and no additional contraceptive precautions are needed.
- If more than 12 h late, the missed pill should be taken (this may mean taking two pills in the same day) and additional contraceptive precautions should be taken for the next 7 days.

- If one or more pills are missed during the first week of taking *DSG*, and the woman had sex in the week before starting *DSG*, the risk of pregnancy is higher than at other times in the cycle. EHC should be offered – see the section 'Emergency hormonal contraception' later in this chapter.

The Faculty of Sexual and Reproductive Healthcare Clinical Effectiveness Unit (FSRH CEU) suggested consultation framework is outlined in Box 6.2.

Box 6.2 Consultation framework for pharmacy supply of DSG

When *DSG* POP is sold as a pharmacy medicine, the FSRH CEU suggests that the provider would:

1. Assess competence of the individual to consent to and comply with use.
2. Assess competence of the individual to consent to sexual activity.
3. Assess current risk of pregnancy, any current requirement for emergency contraception and any recent use of emergency contraception.
4. Identify current abnormal vaginal bleeding that may require investigation.
5. Assess medical eligibility.
6. Take a drug history to exclude interaction that could affect effectiveness or safety of either *DSG* or the other drugs taken.
7. Discuss:
    - Effectiveness with perfect and typical use of *DSG*
    - Bleeding patterns and side effects
    - When to start taking *DSG*, how to take it, missed pill rules, and how to access emergency contraception if missed pill rules are not followed
    - Alternative contraceptive options, including long-acting reversible contraception, and where to access them locally
8. Explain that *DSG* is also available free of charge from primary care and community clinics.
9. Signpost the user to the information required for safe, effective use of the product. Information should be available in a format that is accessible to the user.
10. Provide information about safer sex and accessing STI testing.
11. Encourage engagement in cervical and breast screening programmes.

Sickness and diarrhoea

If a patient vomits within 3–4 h of taking *DSG*, it may not have been fully absorbed. They should take another pill straight away and the next pill at their usual time. If another pill is not taken within 12 h of the normal time, the patient should use additional contraception for 7 days.

Very severe diarrhoea – 6–8 watery bowel motions in 24 h – may also mean that the pill does not work properly. Here, the patient should continue taking the pill and use additional contraception for as long as the diarrhoea continues and for 7 days after recovering.

If the patient continues to be sick or have diarrhoea, they should keep using another form of contraception, such as condoms, while they are ill and for 7 days after recovering.

Breastfeeding

Small amounts of progestogen may pass into the breast milk and *DSG* is safe to use while breastfeeding.

Pregnancy

There is a little chance of becoming pregnant while taking *DSG*, if it is taken regularly. There is no evidence that *DSG* harms the unborn baby. Ectopic pregnancy is rare, but can occur.

Sexually transmitted infections

All patients should be advised that *DSG* does not prevent STIs. Besides using *DSG* as a more effective contraceptive, condom use should be advised for this purpose. Pharmacists are experienced in sexual health counselling through provision of chlamydia screening, as well as through supply of EHC.

Desogestrel progestogen-only pill in practice

Case 1

A young woman comes into your pharmacy with an older man. He waits near the door while she comes up to the counter. She asks if she can buy some of the contraceptive pills that you can get OTC. You ask if she has bought it before and she says not, so you explain that you need to ask some questions before deciding if it is right for her. You invite her into your consultation room. She seems nervous, but you use your experience from other sexual health consultations to build rapport and put her at ease. In response to your questions, she tells you that she is 19 years old, has periods 'like clockwork' and has been having sex for a while with her boyfriend (who has come to the pharmacy with her). She does not have any vaginal bleeding between periods or after sex. They use condoms and occasionally EHC if they have run out of condoms and had unprotected sex (but this has not happened within the last month). She does not have any relevant medical history and is not taking any medicines.

The pharmacist's view

POP was a good option for this woman who had not previously used a regular and reliable form of contraception. I said she would be able to buy it and explained that she could get it free of charge from her GP or family planning clinic. She said she would rather pay and did not want to have to wait to get an appointment. I used the FSRH consultation framework and explained about common side effects and missed pills. Then, I provided 3 months' supply of *DSG* and told her that next time if she was happy with the POP, I would be able to continue to supply it for a further 12 months. I also broached the subject of chlamydia and discussed how she could get tested for this; she said she would think about this further.

The doctor's view

The provision of *DSG* is reasonable for this patient. It is a highly effective method of contraception if used correctly. She would benefit from a more reliable continuous method given her history, but would need to be able to consistently take *DSG* at the same time every day; this does not suit people who do not have a regular lifestyle. It is important that she is made aware of other forms of contraception, particularly 'long-acting' options, such as the IUCD or injection methods. A key issue may be whether she can afford to buy it, but in this case, she prefers to pay for the convenience of pharmacy supply. It might be a good time to suggest that condom use will help protect against STIs, such as chlamydia, but this topic needs to be handled sensitively, particularly if she has one regular sexual partner.

EMERGENCY HORMONAL CONTRACEPTION

Emergency contraception is an intervention aimed at preventing unintended pregnancy after unprotected sexual intercourse or contraceptive failure. Two hormonal preparations are available OTC: *ulipristal acetate 30 mg* and *levonorgestrel 1.5 mg*. Dealing with requests for EHC requires sensitive interpersonal skills from the pharmacist, privacy for the consultation and careful question wording. Some 20% of women will go to a pharmacy other than their regular one because they want to remain anonymous.

A regular method of contraception should be discussed whenever EHC is requested OTC if the woman is not using regular contraception.

What you need to know

Age

Why EHC is needed – confirmation that unprotected sex or contraceptive failure has occurred

When unprotected sex/contraceptive failure occurred

Could the woman already be pregnant?

Bodyweight

Other medicines being taken

Significance of questions and answers

Age

Levonorgestrel EHC can be supplied OTC for women aged 16 years and over; the supply of *ulipristal* to under-16s is not contraindicated by the manufacturer, but pharmacists will want to consider Royal Pharmaceutical Society (RPS) guidance on vulnerable adults and children. For women under 16 years who wish to buy *levonorgestrel*, the pharmacist should refer to the doctor or family planning service. In the NHS, EHC may be supplied free of charge under a PGD according to a locally agreed protocol. Many of these schemes include community pharmacies, and, if the PGD so states, supply can also be made to a woman under 16 years.

Why emergency hormonal contraception is needed

The most common reasons for EHC to be requested are failure of a barrier contraceptive method (e.g. condom that splits), missed contraceptive pill(s) and unprotected sexual intercourse. In the case of missed pills, the pharmacist should follow the guidance of the FSRH CEU (*Emergency Contraception*: *Guidance*, March 2017 [updated December 2020], at `www.fsrh.org`). A summary of this guidance is available in the *BNF* for individual types of pill (the online version of the *BNF* is updated monthly – `https://bnf.nice.org.uk/`).

When unprotected sex/contraceptive failure occurred

Ulipristal needs to be started within 120 h (5 days) of unprotected intercourse and *levonorgestrel* within 72 h (3 days). The sooner EHC is started, the higher is its efficacy. If hormonal EHC is unsuitable for the woman, she can be referred to have copper intrauterine device (Cu-IUCD) fitted as a method of emergency contraception, provided this is done within 120 h of unprotected intercourse.

Requests are sometimes made for EHC to be purchased for use in the future (advance requests, e.g. to take on holiday just in case). This is considered in the following text under Practical Points.

Could the woman already be pregnant?

Any other episodes of unprotected sex in the current cycle are important. Ask whether the last menstrual period was lighter or later than usual. If in doubt, you can suggest that the woman has a pregnancy test. EHC will not work if the woman is pregnant. There is no evidence that EHC is harmful to the pregnancy.

Bodyweight

It is possible that a high bodyweight or BMI could reduce the effectiveness of *levonorgestrel*. Ask the patient about her BMI or weight; if BMI is greater than 26 kg/m^2 or weight is greater than 70 kg, the FSRH recommends that *ulipristal acetate* is offered. The FSRH guideline advises that a double dose of *levonorgestrel* is an alternative, but this dose is not included in provisions for OTC use (and the manufacturer does not think it necessary as the evidence is inconclusive).

Other medicines being taken

Medicines that induce specific liver enzymes have the potential to increase the metabolism of both oral EHC products and thus reduce efficacy. Women taking the following medicines (or have taken them in the previous 4 weeks) should be referred to attend the GP or sexual health clinic on the same day:

- Barbiturates and other medicines used to treat epilepsy (e.g. *primidone*, *phenytoin* and *carbamazepine*)
- Medicines used to treat tuberculosis (e.g. *rifampicin* and *rifabutin*)
- Treatment for HIV (e.g. *ritonavir* and *efavirenz*)
- A medicine used to treat fungal infections, e.g. *griseofulvin*
- Herbal remedies containing *St John's wort* (*Hypericum perforatum*)

The doctor may advise another type of (non-hormonal) emergency contraceptive, such as a Cu-IUCD. If this is not an option, the patient is prepared to accept, or if they are unable to see a doctor promptly, the patient can take a double dose of *levonorgestrel* 1.5-mg tablets.

There is an interaction between *ciclosporin* and *levonorgestrel*. Here, the progestogen inhibits the metabolism of *ciclosporin* and increases drug levels.

The effectiveness of *ulipristal acetate* could theoretically be reduced if a woman has taken progestogen prior to, or immediately after, taking *ulipristal*. The FSRH recommends that patients should avoid taking POP for 5 days after taking *ulipristal* (see the section '*Desogestrel* oral contraception' covered earlier in this chapter).

Treatment timescale

EHC must be started within 120 h of unprotected intercourse for *ulipristal* or 72 h for *levonorgestrel*.

When to refer

Age under 16 years
Longer than 120 h since unprotected sex
Taking a medicine that interacts with EHC
Requests for future use if appropriateness uncertain

MANAGEMENT

Levonorgestrel (within 72 h) and *ulipristal* (within 120 h) should be taken as soon as possible after unprotected intercourse for maximum efficacy. A replacement dose should be taken if vomiting occurs within 3 h of taking either medicine. *Ulipristal* has been demonstrated to be more effective than *levonorgestrel* for emergency contraception.

Ulipristal

Dosage

Ulipristal is taken as a 30milligram single dose as soon as possible after unprotected intercourse.

This medicine can be used as EHC more than once in the same cycle, but menstrual irregularity may be an issue.

Side effects

The most frequently reported side effects in clinical trials were headache (around one in five women) and nausea (around one in eight women).

Breastfeeding

The manufacturer advises not to breastfeed for 1 week after taking *ulipristal* and during this time to continue to express and discard the milk.

Women who should not take ulipristal

The product licence for the P medicine states that it should not be taken by a woman who is pregnant (because it will not work) or has severe hepatic dysfunction. Use of this drug in women with severe asthma treated with oral steroids is not recommended.

Levonorgestrel

Dosage

Levonorgestrel is taken as a dose of one 1.5 milligram tablet as soon as possible after unprotected intercourse.

Side effects

The most frequently reported side effects in clinical trials were headache (around one in five women) and nausea (around one in eight women). Far fewer women (1%) actually vomited. Although the likelihood of vomiting is less, absorption of *levonorgestrel* could be affected if vomiting occurs within 3 h of taking the tablet, and therefore another dose is needed as soon as possible.

Women who should not take levonorgestrel

The product licence states that it should not be taken by a woman who is pregnant (because it will not work), has severe hepatic dysfunction or has severe malabsorption (e.g. Crohn's disease). Repeated administration within a menstrual cycle is not recommended, although the FSRH advises that *levonorgestrel* can be used as EHC more than once in the same cycle, but that menstrual irregularity may be an issue.

Advice to give when supplying emergency hormonal contraception

Based on both BNF and FSRH guidance:

1. Women should be advised:
    - That their next period may be early or late.
    - That a barrier method of contraception needs to be used until the next period.
    - To seek medical attention promptly if any lower abdominal pain occurs because this could signify an ectopic pregnancy.
    - To return in 3–4 weeks if the subsequent menstrual bleeding is abnormally light, heavy or brief or is absent or if she is otherwise concerned (if there is any doubt as to whether menstruation has occurred, a pregnancy test should be performed at least 3 weeks after unprotected intercourse).
2. The woman should have a pregnancy test if:
    - Her next period is more than 7 days later than usual, is lighter than usual, or is associated with abdominal pain that is not typical of the woman's usual dysmenorrhoea.
    - Hormonal contraception is started soon after use of emergency contraception even if she has bleeding; bleeding associated with the contraceptive method may not represent menstruation.
3. If the woman takes the COC, she and her partner should use condoms in addition to continuing the pill until she has taken it for 7 consecutive days.
4. EHC does not equate to ongoing contraception, nor does it offer protection against STD.
5. A regular method of contraception should be suggested whenever oral EHC is requested if the woman is not using regular contraception.

PRACTICAL POINTS

1. PGDs are available in many areas for pharmacists to supply EHC on the NHS. PGDs were introduced to enable quicker access for EHC to women who are not covered by the OTC product licence (e.g. those under 16 years for *levonorgestrel*) and to overcome the difficulties faced by some women in relation to the cost of OTC EHC in England (up to £35). It is supplied free of charge in Scotland and Wales. Pharmacists supplying under a PGD undertake additional training, follow a closely defined protocol and keep records of their provision.

2. Pharmacists need to know how to access local family planning services (or sexual health clinics) including their opening hours so that they can refer patients to them if, for some reason, it is not appropriate for EHC to be supplied by them. Knowledge of local services is also important for advice to women who may wish to obtain regular contraception and information about STDs.
3. On advance supply of EHC, RPS guidance states:
   'Pharmacists can provide an advance supply of oral emergency contraception (prior to unprotected sexual intercourse or in case of failure of a contraceptive method) to a patient requesting it at the pharmacy'.

   The RPS advises pharmacists to use the information provided in the RPS product reference guide on their website, and the individual SmPCs, to help assess if the advance supply of oral EHC is clinically appropriate for the patient. They also need to assess whether the patient using it is competent and whether they intend to use it appropriately.

   In a trial of wider access to EHC involving over 2000 women, those who had advance supplies at home were more likely to use EHC when required, without compromising regular contraceptive use or increasing risky sexual behaviour.
4. On supply to a patient representative, RPS guidance states:
   'You can make the supply to someone else (other than the patient directly) if you are satisfied it is a genuine request and the treatment is clinically appropriate for the patient. You should telephone the patient to assess suitability of the oral emergency contraceptive if their representative cannot provide you with the necessary information to determine whether the request is appropriate and genuine'.

Emergency hormonal contraception in practice

Case 1

A customer whom you recognise as a regular comes into the pharmacy and asks to speak to the pharmacist. She says that she thinks she needs EHC and you move to the consultation room in the pharmacy. On questioning, you find out that she takes the POP, but was away from home on business earlier this week and missed one pill, as she forgot to take them with her. The packet says that other contraception will be needed for 7 days. She had sex last night and says she had not had the chance to get any condoms. She is not taking any medicines other than the POP and is not taking any herbal remedies. She weighs 68 kg. Her last period was normal and there have been no other episodes of unprotected sex.

The pharmacist's view

Many of the women who request EHC are aged between 20 and 30 years and are regular users of contraception, but something goes wrong. This woman should take oral EHC and the pharmacist can go through the patient information leaflet with her to advise on timing of doses and what to do about side effects should they occur. The pharmacist can also sell condoms/spermicide and reinforce the advice about continuing other contraceptive methods until her POP has been taken for 7 consecutive days to regain the contraceptive effectiveness.

The doctor's view

The pharmacist's approach is appropriate. It is likely that the consultation was made easier because the pharmacist already had a professional relationship with the patient, which makes it more comfortable for her to seek advice in the first place. It would be useful for the customer to review the appropriateness of her POP and whether she has missed pills before. She could be advised to have a follow-up with her pill prescriber and also to consider other forms of contraception.

Case 2

It is a Saturday afternoon about 4.30 pm. A young woman comes into your pharmacy, asks your counter assistant for EHC and is referred to you. You move to the consultation area of the pharmacy and in response to your questions she tells you that she had intercourse with her boyfriend last night for the first time. No contraception was used. She is not taking any medicines or herbal remedies. She weighs 59 kg. Her periods are fairly regular about every 30 days. You think the woman may be under 16 years.

The pharmacist's view

This woman had unprotected sex 12–18 h ago. If she is under 16 years, the use of OTC EHC would be outside the terms of the product licence for levonorgestrel and the pharmacist could ask her age. Some pharmacies can supply EHC on the NHS to those under 16 years through a PGD. If the area does not have a PGD, the pharmacist will have to consider what other methods of access are available. A walk-in centre, GP out-of-hours centre or accident and emergency department might be available, and the timescale for use of *ulipristal* is up to 120 h, so an appointment on Monday to access it would still be within this time. The pharmacist should tactfully suggest that she could get advice on regular contraception and discuss whether she would prefer to get this from her GP or local family planning service.

The doctor's view

Referral does depend on her age, which can be difficult to assess, and whether or not there is a local PGD. One of the problems here is the day and time of presentation. It is unlikely that the local family planning service would be open late on a Saturday. She could wait until Monday and that would be OK for *ulipristal*, but as a general principle it would be better to take the EHC as soon as possible. A 'window of opportunity' is provided by her attendance. The pharmacist could phone the on-call GP service. This could probably be done in the pharmacy, and the patient could discuss what to do with the duty GP or nurse (or the pharmacist could do this, with the patient's permission). If the patient turns out to be under 16, the GP has a duty to advise her to discuss this with her parents. The General Medical Council (GMC) guidance is that the GP can prescribe contraceptives to young people under the age of 16 years without parental consent or knowledge, provided that:

(a) They understand all aspects of the advice and its implications (they are 'competent').
(b) You cannot persuade the young person to tell their parents or to allow you to tell them.
(c) In relation to contraception and STIs, the young person is very likely to have sex with or without such treatment.
(d) Their physical or mental health is likely to suffer unless they receive such advice or treatment.
(e) It is in the best interests of the young person to receive the advice and treatment without parental knowledge or consent.

The GMC also states the following: 'You should keep consultations confidential even if you decide not to provide advice or treatment'.

Case 3

A woman asking for EHC is referred to you. She thinks that she may be pregnant as she takes *Microgynon 30*®, a COC, and missed two pills this week, which is during the second week of the packet. This brand of pill contains 30 micrograms of *ethinyloestradiol*. She had sex last night. Her last period was normal.

The pharmacist's view

The FSRH advises that EHC is not needed unless the woman has missed two pills during the first week of taking it – this patient missed the pills in the second week. This assumes that she took the pill every day during the first 7 days. The woman should avoid further sexual intercourse or use condoms until seven consecutive pills have been taken. The pharmacist should discuss this with the woman. If she continues to be concerned and still wants to take EHC, the pharmacist could supply it as there are no safety concerns. The timing of the next period may be disrupted. The pharmacist could also suggest that she buys some condoms and spermicide.

The doctor's view

The pharmacist's advice is appropriate. The FSRH advice is complicated – a useful summary can be found in the *BNF* and is worth consulting for individual cases. Note that advice for the newer pills *Qlaira*® and *Zoely*® is different. It would be useful to know if the woman has had similar problems before. If she has had several events like this, changing to an IUD or some other form of long-acting contraception may be a better option for her.

Case 4

> *'It was the week before I was due to go travelling in South America with my boyfriend for 6 months during my gap year. We're used to using condoms but I'm worried in case one splits while we're away. So I'm going to a pharmacy to see if I can buy the emergency contraception pill to take with me. I don't want to go to the doctors to ask for it.'*

This woman is now in your pharmacy asking to purchase EHC 'in advance'. Use the following chart to use your professional judgement and decide how to deal with the request. What other contraception options might the patient be advised to consider (if there is time)?

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?

COMMON SYMPTOMS IN PREGNANCY

Constipation (see Chapter 3: Gastrointestinal Tract Problems: Constipation)

Constipation can occur in pregnancy because of the effect of hormonal changes. These changes reduce the contractility of the intestine, which slows down the transit of waste products. This in turn allows more fluid to be extracted through the bowel wall, which makes the faecal matter dry and hard. Some pregnant women take oral *iron* preparations for anaemia, which can aggravate constipation. It makes sense to try to prevent this problem by attention to diet (fruit, vegetables and whole grain cereal, lentils and pulses) and increased fluid intake. If the constipation is aggravated by *iron* tablets, it may be worthwhile discussing a change of preparation with the GP.

Laxatives that are not absorbed, such as *lactulose* and *ispaghula husk*, are often used in pregnancy. Stimulant laxatives can be used, but should only be considered if other interventions fail; *senna* is sometimes used for this purpose, but this should be avoided towards the end of the pregnancy as it can stimulate the uterus.

Haemorrhoids (see Chapter 3: Gastrointestinal Tract Problems: Haemorrhoids)

Haemorrhoids (piles) can be aggravated by constipation, and in pregnancy relaxation of the muscles in the pelvic floor and anus can lead to dilatation and swelling of the vascular cushions in the anal canal (haemorrhoids or piles). The dilatation is aggravated by the influence of the pregnancy hormones and constipation. Later in pregnancy, as the baby's head pushes down into the pelvis, further pressure is exerted on these vessels, which aggravates haemorrhoids.

In the management of haemorrhoids, it is important to avoid constipation, take regular exercise to improve circulation, avoid standing for long periods and discuss with the pharmacist, midwife or GP an appropriate OTC treatment.

Backache

As pregnancy progresses, the ligaments of the lower back and pelvis become softer and stretch. Posture also changes, leading to an increased forward curve in the lumbar (lower) spine, which is called a lordosis. The change in the ligaments and the lordosis can lead to low backache.

Occasional use of *paracetamol* is acceptable in pregnancy if a painkiller is needed, but this is best avoided, if possible. Common-sense techniques avoiding heavy lifting, awkward bending and twisting are advisable, as is a good supportive mattress. Further help may be gained from an obstetric physiotherapist and chiropractor or osteopath.

Cystitis (see the section 'Cystitis', earlier in this chapter)

Increased frequency of urination is common in pregnancy and, although inconvenient, is medically unimportant. When it is associated with any signs of cystitis, such as discomfort on urination, discolouration or offensive smell of urine, urgent referral to the GP is important. When cystitis occurs in pregnancy, the infection can move upwards from the bladder to the kidneys, causing a much more serious infection. If there is any doubt about cystitis being present, it is important to have the urine sent for analysis.

Headache

Headaches can be a common problem for some women in pregnancy. It is best to have a balance of exercise, rest and relaxation. Occasional *paracetamol* can be taken, but it is generally advisable to avoid medication during pregnancy. Occasionally, persistent or severe headaches are related to raised blood pressure, particularly late in pregnancy. This is a severe complication, and, if suspected, it is important to get the midwife or GP to check for this.

Heartburn (see Chapter 3: Gastrointestinal Tract Problems: Heartburn)

Heartburn in pregnancy is caused by the relaxation of the muscles in the lower oesophagus, allowing the acid stomach contents to regurgitate upwards, causing a burning sensation. It is experienced by most pregnant women to some extent. This acid reflux can also cause inflammation of the oesophagus, i.e. oesophagitis. It is aggravated as pregnancy progresses by pressure on the stomach from the growing baby. It can be reduced by raising the head of the bed, eating small meals and not eating prior to going to bed. A glass of milk may help. If antacid treatment is to be recommended, the pharmacist will need to consider the sodium content and avoid any medicine with a high sodium level. Often, midwives or the doctor may prescribe a suitable product.

Nausea/vomiting (morning sickness)

Nausea and vomiting is very common, especially in early pregnancy: nausea affects 70% of pregnant women and vomiting 60%. It is sometimes misleadingly called morning sickness as it can actually occur anytime during the day. Vomiting ceases by the 16th week in 90% of women. It is thought to be caused by the surge in hormone levels. It is important to take plenty of rest and get up in the morning slowly, drink plenty of fluids, avoid food and smells that aggravate this condition and eat bland foods. Ginger and acupressure may be helpful. There are some trials that suggest that ginger reduces nausea and vomiting, but they all involve small numbers of people. The evidence for acupressure and acupuncture is inconclusive.

Vaginal discharge

A change in the normal vaginal secretions occurs in most women during pregnancy, and they tend to become more profuse. Some women are concerned by this and may ask for advice. Providing that the discharge is clear or white and non-offensive, it is a normal response to pregnancy. If, however, the discharge has an unpleasant odour, is coloured or is associated with symptoms, such as soreness or irritation, referral to the midwife or GP is advised. The most common infection is thrush and this is usually managed with topical and intravaginal imidazoles.

Skin irritation and stretch marks

Mild skin irritation is common in pregnancy. It is due to increased blood flow to the skin and the stretching of the abdominal skin. Wearing loose clothing may help as may perhaps the use of an emollient/moisturising cream. Rarely if the itching becomes severe, a more serious cause may be revealed, i.e. obstetric cholestasis (also known as intrahepatic cholestasis of pregnancy). This condition may be associated with jaundice and can have a deleterious effect on the baby. It is important to refer those patients who complain of severe itching.

Often the first sign of stretch marks in pregnancy is itchiness around an area where the skin is becoming thin and pink. These develop into stretch marks, which are narrow pink or purplish streaks on the surface of the skin. They usually appear on the abdomen or sometimes on the upper thighs or breasts. They vary from one woman to another but can cause distress. Reassurance is required that the marks should gradually fade away after pregnancy and become less noticeable, but they probably will not go away completely. Some creams and lotions claim either to prevent stretch marks or to remove stretch marks, but there is no reliable evidence that they work.

Note: The Cochrane reviews and NICE guidelines do not have a date as they are often updated. The most up-to-date version should be consulted.

Section	**CKS (`cks.nice.org.uk`)**	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	
Cystitis	☑ Urinary tract infection (lower) – women	☑	• Urinary tract infection in under 16s: diagnosis and management, CG54 • Urinary tract infection (lower): antimicrobial prescribing. NICE guideline, NG109	• Public Health England. Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation. Last update December 2020. `https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/927195/UTI_diagnostic_flowchart_NICE-October_2020-FINAL.pdf` (Accessed 21 February 2022) • Cochrane review: cranberries for preventing urinary tract infections
	☑ Chlamydia – uncomplicated genital	☑ Chlamydia		• Gov.UK Population Screening Programmes `https://www.gov.uk/government/collections/national-chlamydia-screening-programme-ncsp` (regularly updated) (Accessed 21 February 2022)
Incontinence	☑	☑	Urinary incontinence and pelvic organ prolapse in women: management [NG123] 2019	

Dysmenorrhoea	☑	☑ Painful periods		• Cochrane review: transcutaneous electrical nerve stimulation for primary dysmenorrhoea
Premenstrual syndrome	☑	☑		• RCOG (2016). Premenstrual Syndrome, Management (Green-top Guideline No. 48).
Menorrhagia	☑	☑	• Heavy menstrual bleeding: assessment and management, CG54	• Jarvis S, Tidy C. Heavy Periods Menorrhagia (updated August 2020) `https://patient.info/womens-health/periods-and-period-problems/heavy-periods-menorrhagia` (Accessed 22 February 2022)
Menopause	☑ Menopause	☑		• BMJ Best Practice: Menopause • Menopause. RCN 2020 Guidance. • `https://www.rcn.org.uk/professional-development/publications/rcn-menopause-guidance-for-nurses-midwives-and-health-visitors-uk-pub-0093326` (Accessed 21 February 2022)
Vaginal thrush	☑ Candida – female genital ☑ Vaginal discharge	☑ Thrush		• Cochrane review: (oral versus intra-vaginal imidazole and triazole antifungal treatment of uncomplicated vulvovaginal candidiasis (thrush) • British Association for Sexual Health and HIV (2019). National guideline on the management of vulvovaginal candidiasis. `www.bashhguidelines.org` (Accessed 22 February 2022)

(*Continued*)

Section	**CKS (`cks.nice.org.uk`)**	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	
Emergency hormonal contraception	☑	☑		• Faculty of Sexual and Reproductive Healthcare (updated December 2020). `https://www.fsrh.org/standards-and-guidance/documents/ceu-clinical-guidance-emergency-contraception-march-2017/` (Accessed 22 February 2022) • General Medical Council (updated 2018). 0–18 years guidance: contraception, abortion and sexually transmitted infections (STIs). `https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/0-18-years` (Accessed 22 February 2022) • General Pharmaceutical Council (2017). Guidance on religion, personal values and beliefs. `https://www.pharmacyregulation.org/news/gphc-council-approves-guidance-religion-personal-values-and-beliefs` (Accessed 22 February 2022)
Common symptoms in pregnancy	☑ Nausea/ vomiting in pregnancy ☑ Constipation	☑ ☑ Itching and intrahepatic cholestasis of pregnancy		

CHAPTER 7

Men's Health

LOWER URINARY TRACT SYMPTOMS

Lower urinary tract symptoms (LUTS) comprise storage, voiding and post-micturition symptoms affecting the lower urinary tract in older men. Voiding symptoms include weak or intermittent urinary stream, straining, hesitancy in starting urination, terminal dribbling and incomplete emptying. Storage symptoms include urinary urgency, urinary frequency, urge incontinence and nocturia. The major post-micturition symptom is dribbling, which is common and troublesome.

Possible causes of LUTS include abnormalities or abnormal function of the prostate, urethra, bladder or sphincters. Terms such as prostatism and benign prostatic hyperplasia (BPH) have been commonly used to describe LUTS in men. The term LUTS is now recommended instead because abnormality or growth in the size of the prostate only partly explains urinary symptoms in some men.

LUTS are a major burden for the ageing male population. Age is an important risk factor and the prevalence of LUTS increases as men get older. Troublesome LUTS can occur in up to 30% of men older than 65 years. LUTS rarely cause serious illness, but symptoms can severely affect the quality of life of both the sufferer and their family. Many men perceive their symptoms as an inevitable part of growing older; they may also be embarrassed by them and may not seek help.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

What you need to know

Age
- Nature of the symptoms
- Urinary symptoms – hesitancy, weak stream, urgency
- Duration
- Previous history
- Other symptoms
- Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

LUTS is a condition affecting men who are aged over 40.

Nature of the symptoms

Common symptoms include the following:

- A weak urine flow
- Need to urinate more often, especially at night
- A feeling that the bladder has not emptied properly
- Difficulty starting to pass urine
- Dribbling of urine
- Urgency – need to rush to the toilet

The International Prostate Symptom Score (IPSS) is helpful in assessing symptoms. It includes seven urinary symptoms (incomplete emptying/frequency/intermittency/urgency/weak stream/straining/nocturia) and one question on quality of life – all graded in severity from 1 to 5. 'Mild' refers to an IPSS of 0–7; 'moderate' refers to an IPSS of 8–19; and 'severe' refers to an IPSS of 20–35. Severity of LUTS should ideally be assessed using a validated scoring system, such as the IPSS, and it is good practice to use a questionnaire to elicit information. Research showed that community pharmacy patients viewed the use of a questionnaire or checklist in relation to *tamsulosin* as meaning they were receiving a thorough assessment.

Duration

Men may present with symptoms that have lasted for months or even years.

Previous history

A typical history would describe gradual onset of the symptoms covered by the IPSS over a period of time, with symptoms slowly increasing.

Other symptoms

Men who are experiencing other urinary symptoms, such as pain on micturition, blood in the urine, cloudy urine, fever or incontinence, need to be directed to the general practitioner (GP) surgery. If they have concerns about possible prostate cancer, they should also go to the surgery.

Medication

Medication taken by patients can frequently cause or aggravate LUTS. If this is suspected, the patient should be asked to discuss this with the prescriber.

Drugs with an antimuscarinic action, such as tricyclic antidepressants, sedating antihistamines, antimuscarinic drugs for urinary incontinence and *disopyramide*, are associated with difficulty in emptying the bladder (voiding) problems. If severe, this can result in urinary retention. Inhalers containing *ipratropium* are also known to aggravate LUTS.

Drugs such as calcium channel blockers, diuretics and selective serotonin reuptake inhibitors are associated with nocturia, which can result in disturbed sleep.

When to refer

'Red flag' warning symptoms (urgent referral)

- Pain on urination in the last 3 months
- Fever that might be related to a urinary tract infection (UTI)
- Bloody or cloudy urine in the last 3 months (could indicate possible UTI)
- Urinary incontinence (leaking of urine may indicate chronic urinary retention)

MANAGEMENT

Mild symptoms may be managed through lifestyle changes. This can include advice on prudent fluid intake and maintaining a healthy lifestyle with a balanced diet and regular exercise (see Lifestyle advice below). Limiting caffeine and alcohol intake can be particularly helpful.

Tamsulosin

Tamsulosin can be used as over-the-counter (OTC) medicine for up to 6 weeks, and a medical diagnosis is required before any further treatment after this time. There is guidance on OTC *tamsulosin* from the Royal Pharmaceutical Society.

Tamsulosin is an alpha$_1$-adrenoceptor antagonist ('alpha$_1$-blocker') that relaxes smooth muscle around the prostate and bladder outlet, which results in increased urinary flow. OTC *tamsulosin* is indicated for males aged 45–75 years. The dose is one 400 microgram capsule swallowed whole after the same meal each day. Symptoms may start to improve within a few days, and it may take at least a month to see the full effect. The more severe the symptoms, the greater the absolute reduction in symptom scores.

All patients must see their doctor within 6 weeks of starting treatment to confirm the diagnosis, exclude prostate cancer, and for assessment of their symptoms and to confirm that they may continue to obtain OTC *tamsulosin* from their pharmacist. The GP would be expected to:

- Assess the man's general medical history and comorbidities and review current medication to identify possible causes of the LUTS
- Offer a physical examination
- Assess baseline symptoms to allow assessment of subsequent symptom changes
- Offer urine dipstick, prostate-specific antigen and serum creatinine testing as appropriate (see National Institute for Health and Care Excellence (NICE) LUTS Guideline CG97 or Clinical Knowledge Summaries (CKS) guidance for further details)
- Refer the man for specialist assessment in some cases

Treatment timescale

Pharmacy staff will assess eligibility for an initial supply of *tamsulosin*. If urinary symptoms have not improved within 14 days of starting treatment, or are getting worse, the patient should be referred to the doctor.

If improvement is seen, a further 28 tablets can be supplied, after which the GP should confirm diagnosis and suitability for longer-term OTC treatment. Before making any further OTC supplies, the pharmacist needs to check with the patient that the doctor has carried out a clinical assessment and confirmed that OTC treatment can be continued. Patients taking *tamsulosin* in the longer term should see their doctor annually for a clinical review.

Contraindications

Tamsulosin should not be supplied if the LUTS are of recent duration (<3 months). Any patient who has had prostate surgery, problems with the liver, kidney and/or heart or unstable or undiagnosed diabetes should not take OTC *tamsulosin*. Patients who suffer from fainting, dizziness or weakness when standing (postural hypotension) should not have *tamsulosin* recommended. Planned cataract surgery or recent blurred/cloudy vision that has not been examined by a GP or optometrist (which may be indicative of unrecognised cataracts) is also a contraindication.

Drug interactions

There is a theoretical risk of enhanced hypotensive effect if *tamsulosin* is given concurrently with medicines that reduce blood pressure. *Tamsulosin* should not be recommended for patients taking antihypertensive medicines with significant alpha$_1$-adrenoceptor antagonist activity, e.g. *doxazosin*, *indoramin*, *prazosin*, *terazosin* or *verapamil*. Care should be taken if drugs for erectile dysfunction (ED), such as *sildenafil, tadalafil* or *vardenafil,* are being used as these drugs are associated with hypotension.

Side effects

The common or very common side effects are dizziness and sexual dysfunction (little or no semen at ejaculation). Uncommon side effects (which affect between 1 in 100 and 1 in 1000 people) are headache, palpitations, postural hypotension, rhinitis, constipation, diarrhoea, nausea, vomiting, rash, pruritus, urticaria, abnormal (dry) ejaculation and asthenia (weakness). As with other alpha-blockers, drowsiness, blurred vision, dry mouth or oedema can occur.

There is a theoretical risk of enhanced hypotensive effect if *tamsulosin* is given concurrently with medicines that reduce blood pressure.

Cautions

In some individuals, *tamsulosin* can cause a reduction in blood pressure. Signs of orthostatic hypotension are dizziness and weakness on standing. If this occurs, the patient should sit or lie down straight away. A rare problem that has occurred during cataract surgery in some patients who are taking (or have previously taken) *tamsulosin* is 'intraoperative floppy iris syndrome'. Therefore, this medicine is not recommended for patients who are due to have cataract surgery.

Herbal remedies

An updated systematic review found no evidence of benefit of the herbal remedy saw palmetto. NICE advise not to offer phytotherapy (herbal remedies), homoeopathy or acupuncture treatment for LUTS in men.

LIFESTYLE ADVICE

Mild symptoms may be relieved by making some lifestyle changes:

(a) Avoid alcohol and caffeine consumption. Alcoholic drinks or drinks containing caffeine, such as tea, coffee or cola, can irritate the bladder and result in the need to pass urine more often.
(b) Drink less in the evening. Reduce the volume of fluid drunk in the evening and avoid drinking liquids for 2 h before bedtime. This will reduce the chance of needing to get up in the night to pass urine. It is still important to drink enough fluid earlier on during the day.
(c) Empty the bladder. Go to the toilet before long journeys or before situations where a toilet cannot easily be reached.
(d) Practise double voiding. This involves waiting a few moments after finishing passing urine and then trying to go again. It can help to empty your bladder more completely.
(e) Avoid constipation as it can put pressure on the bladder. Increasing the amount of fruit and fibre eaten helps.
(f) Cold and allergy medicines containing decongestants and antihistamines can affect the bladder muscles and might be best avoided.

ERECTILE DYSFUNCTION

Erectile dysfunction (ED) (commonly known as impotence) is the persistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance. ED is a common condition and its prevalence increases with age. ED can be associated with conditions such as hypertension, diabetes mellitus, hypercholesterolaemia or cardiovascular disease. Stress from inability to perform can aggravate the condition. Purely psychological causes account for 1 in 10 cases. ED can have adverse effects on emotional well-being and self-esteem.

Sildenafil is an effective treatment for ED; it was first made available on prescription in 1998, and has now been made available as an OTC medicine (P) for use by patients over the age of 18 years. It is hoped that enabling wider legal access by providing OTC *sildenafil* via the pharmacy can go some way to reduce 'black market' sales of *sildenafil*, such as over the Internet, and should be much safer. Questions to identify any medical contraindications are essential prior to supply.

What you need to know

- Age – over 18?
- Medical contraindications (refer to the GP surgery if unsure)
  - Heart attack or stroke within the last 6 months
  - Low blood pressure (hypotension; <90/50 mm Hg)
  - Poorly or uncontrolled high blood pressure
  - Unstable angina (chest pain)
  - Irregular heart beat or palpitations (arrhythmia)
  - Heart problems: valve disorders, left outflow obstruction, aortic narrowing or cardiomyopathy
  - Severe heart failure
  - Previously diagnosed hepatic disease (including cirrhosis of the liver)
  - Severe renal impairment (e.g. estimated glomerular filtration rate (eGFR) or creatinine clearance <30)
  - Blood disorders: sickle cell anaemia, multiple myeloma or leukaemia, or haemophilia
  - Active stomach or duodenal ulcers
  - Pulmonary arterial hypertension (rare)
  - Peyronie's disease or any other conditions causing deformation of the penis (rare)
  - Loss of vision because of damage to the optic nerve or an inherited eye disease, such as retinitis pigmentosa (these are rare)
- Contraindicated medicines
  - Nitrates (including *nicorandil* or other nitric oxide donors, e.g. *glyceryl trinitrate*, *isosorbide mononitrate* or *isosorbide dinitrate*)
  - 'Poppers' for recreational purposes (e.g. amyl nitrite)
  - *Riociguat* or other guanylate cyclase stimulators for pulmonary hypertension
  - CYP3A4 inhibitors, e.g. *ritonavir*, *saquinavir*, *cimetidine*, *itraconazole* or *ketoconazole*, *erythromycin* or *rifampicin* or *diltiazem*
  - Alpha-blockers, such as *alfuzosin*, *doxazosin* or *tamsulosin*

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Sildenafil is very effective (it works in up to 75% of patients) and very safe for most patients. The main safety concerns relate to its use in those with recent cardiovascular disease events, such as myocardial infarction or stroke, and its use at the same time as nitrate drugs for angina. The Medicines and Healthcare products Regulatory Agency (MHRA) advises that cardiovascular fitness for sex can be screened for by asking the patient, 'Can you walk briskly for 20 minutes or climb two flights of stairs without getting breathless?'

There are other conditions to look out for. Many are rare and the majority of patients consulting at the pharmacy will not have them. If you have concerns, refer the patient to the GP. Sometimes, ED drugs can be used in these circumstances under medical supervision.

Some other medicines are also contraindicated. The main ones to consider are those taken for angina, but if angina is a consideration, the patient should be referred to the GP in any case.

MANAGEMENT

Sildenafil citrate

Sildenafil is a phosphodiesterase type 5 inhibitor and prevents the breakdown of cyclic guanosine monophosphate (cGMP). During sexual stimulation, cGMP is produced in the penis, which relaxes the muscle in the corpora cavernosa so that blood can flow into the corpora and produce an erection. Sexual stimulation is still needed to produce an erection.

Not more than one dose of OTC *sildenafil* is to be taken per day. One 50 mg tablet should be taken with water approximately 1 h before sexual activity as it normally takes between 30 and 60 min to take effect; if required, it can be taken up to 4 h before sexual activity. *Sildenafil* can be taken with or without food; fatty meals may delay its absorption and hence effect. Grapefruit and grapefruit juice inhibit the CYP3A4 enzyme and can lead to higher *sildenafil* levels in the blood.

Most patients find that *sildenafil* works after one or two doses (taken on separate days). Some may need to take *sildenafil* a number of times on different days (a maximum of one 50 mg tablet per day), before they can achieve an erection satisfactory for sexual activity. If a patient is still not able to achieve an erection sufficient for satisfactory sexual activity, they should contact their doctor.

In patients taking *ritonavir*, *sildenafil* is contraindicated because it results in a fourfold increase in *sildenafil* concentration. Other CYP3A4 inhibitors have a weaker effect, but medical advice is recommended to decide whether a lower, i.e. 25 mg (prescription-only medicine) dose, may be needed. Postural hypotension may develop in a small number of susceptible patients taking an alpha-blocker (e.g. *alfuzosin*, *doxazosin* or *tamsulosin*), and medical advice is required.

Sildenafil potentiates the hypotensive effects of nitrates, so is contraindicated if a patient is taking a nitrate (e.g. *glyceryl trinitrate* and *isosorbide mononitrate*) or using ‘poppers’ (amyl nitrite).

Side effects: Most side effects are mild or moderate and of short duration. The commonest are headache, which may affect more than 1 in 10 patients, and indigestion/dyspepsia. Nausea, stuffy nose, dizziness, facial flushing, hot flush, colour tinge to vision, blurred vision and visual disturbance are also observed.

When to refer

- Medical and/or medication contraindications
- If *sildenafil* is ineffective
- Adverse effects for immediate referral:
    - Chest pain before, during or after intercourse. Advise to get into a semi-sitting position and try to relax. Do NOT use nitrates to treat the chest pain.
    - A persistent and sometimes painful erection lasting longer than 4 h (priapism)
    - A sudden decrease or loss of vision
    - An allergic reaction: sudden wheeziness, difficulty in breathing or dizziness or swelling of the eyelids, face, lips or throat
    - Serious skin reactions, such as Stevens–Johnson syndrome and toxic epidermal necrolysis: severe peeling and swelling of the skin, blistering of the mouth, genitals and around the eyes, or fever. These are very rare
    - Seizures or fits

PRACTICAL POINTS

1. The drug only works on those with sexual problems related to ED. *Sildenafil* will not enhance sexual performance, and it will not help with other problems, such as premature ejaculation. It will not help with sexual problems related to lack of attraction or relationship breakdown.
2. Mental health – ED may be both a symptom and a cause of depression, and antidepressant drugs can cause impairment of arousal or sex. Pharmacists

should bear this in mind and be alert to the possibility of depression (see Chapter 11: Insomnia and Mental Well-Being).

3. Repeat purchases – If a patient requesting *sildenafil* has previously been supplied with it by the pharmacy, he should be asked if anything has changed with respect to his health status or medicine usage.
4. GP follow-up – Advise the patient to consult his doctor within 6 months of starting to use OTC *sildenafil* for a clinical review of potential underlying conditions and risk factors.
5. Lifestyle advice – Taking regular exercise and the role of stress should be discussed. Advice and support in losing weight and stopping smoking can be offered. Excess alcohol is commonly associated with ED – advise accordingly. Avoiding recreational drugs is also important, and sometimes neglected. Checking that other 'unregulated' drugs for ED are not being purchased (e.g. over the Internet), which may also be an issue and should be discouraged as this is not safe.

HAIR LOSS

Male pattern hair loss (androgenetic alopecia) describes a distinctive pattern of hair loss that may occur in genetically predisposed people and is thought to be androgen dependent. It is also known as male pattern baldness as it is common in men, but it also affects some women. In men, initial signs can occur anytime at or after puberty with age of onset usually being between 20 and 25 years. By 50 years of age, about half of men are affected.

A less common cause is alopecia areata, which leads to patchy non-scarring hair loss that most commonly involves the scalp or beard and, less frequently, the eyebrows and eyelashes. It can occur at any age. Patches of scarring alopecia can occur with infections, such as ringworm (tinea). Causes of diffuse hair loss include telogen effluvium, hypothyroidism, severe iron deficiency and protein deficiency. Some drugs and chemotherapy can also cause hair loss.

Male pattern hair loss may be partly treatable, but there are currently no treatments that the pharmacy can offer. Although hair loss is largely regarded as a cosmetic problem, the psychological effects can be substantial and a sympathetic approach is essential. *Minoxidil* can be purchased OTC by men and women to rub into the affected area of the scalp. An oral drug *finasteride* is also available as a product for men, which is obtainable on private prescription, but not available OTC. Neither of these treatments are available on the National Health Service (NHS) – advise patients they will not get them via NHS prescriptions.

What you need to know

Male or female
History and duration of hair loss
Location and size of affected areas
Other symptoms
Influencing factors
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Male or female

Men and women both may suffer from male pattern hair loss. (It is more common in women than might be supposed; 10% of premenopausal women are affected, and this rises to 30% of those over 70 years.) Alopecia areata can affect people at any age and affects the sexes equally. It is most common in childhood and young adults, and is usually a relapsing condition.

History and duration of hair loss

Male pattern hair loss is characterised by gradual onset of hair thinning and hair loss. In men, hair loss usually initially involves the front and sides of the scalp and progresses towards the back of the head. In women, hair loss is usually more diffuse, affecting the top of the scalp, and there is an increase in the parting width. This type of hair loss in women is increasingly recognised as a problem; it is stigmatising and tends to be disguised with wigs and hairpieces.

Alopecia areata may be sudden and results in patchy hair loss. Its cause remains unknown, but may be autoimmune in origin.

Telogen effluvium (temporary hair loss) usually occurs 2–3 months after significant physical or emotional stress and occurs as a result of sudden cessation of hair growth at that time. The rate of hair loss increases significantly for a period of time before resolving spontaneously and returning to normal. Typically, this can occur following childbirth in women, severe infection, crash diets or major surgery.

Location and size of affected area

If the affected area is less than 10 cm in diameter in male pattern hair loss, then treatment with *minoxidil* may be worth trying.

Other symptoms

Coarsening of the hair and hair loss can occur as a result of hypothyroidism (myxoedema) where other symptoms might include a feeling of tiredness or being run down, a deepening of the voice and weight gain.

Inflammatory conditions of the scalp, such as ringworm infection (tinea capitis), can cause hair loss. Other symptoms would be itching and redness of the scalp with an advancing reddened edge of the infected area. Referral would be needed in such cases.

In women, excessive bleeding during periods (menorrhagia) could lead to iron deficiency and anaemia, which in turn could cause diffuse hair loss or aggravate male pattern hair loss. Absence of periods or very infrequent periods are sometimes due to polycystic ovary disease or elevated prolactin levels, which in both cases can result in male pattern hair loss.

Influencing factors

Hormonal changes during and after pregnancy mean that hair loss is common both during pregnancy and after the baby is born. While this is often distressing for the woman concerned, it is completely normal, and she can be reassured that the hair will grow back. Treatment is not appropriate.

Hair may become thinner during the menopause due to hormonal change (see the section 'Menopause' in Chapter 6: Women's Health).

Medication

Cytotoxic chemotherapy drugs are well known for causing hair loss. Anticoagulants (coumarins), antidepressants, *carbimazole* and anabolic steroids have also been associated with hair loss. Such cases should be referred to the doctor.

When to refer

Alopecia areata
Suspected drug-induced hair loss
Suspected hypothyroidism
Menstrual disorders
Suspected anaemia

Treatment timescale

Treatment with *minoxidil* may take up to 4 months to show full effect.

MANAGEMENT

Minoxidil

Minoxidil is available OTC as a 2% and 5% mousse/foam or solution (check individual products for suitability for men and women and advisable age range). The 5% strength may be slightly more effective, but has a higher risk of irritating the scalp. The mechanism of action of *minoxidil* in hair loss is unknown; the effect was discovered when people on oral minoxidil, in trials for hypertension, reported hair growth. The earlier *minoxidil* is used when male pattern hair loss occurs, the more likely it is to be successful. Treatment is most likely to work where the bald area is less than 10 cm in diameter, where there is still some hair present and where the person has been losing hair for less than 10 years. The manufacturers of *minoxidil* state that the product works best in men with hair loss or thinning at the top of the scalp and in women in a generalised thinning over the whole scalp – both manifestations of male pattern hair loss. Up to one in three users in such circumstances report hair regrowth of non-vellus (normal) hair and stabilisation of hair loss. A further one in three is likely to report some growth of vellus (fine, downy) hair. The final third will not see any improvement.

It is important that patients understand the factors that make successful treatment more or less likely and believe that their expectations are realistic. Some patients may still want to try the treatment, even where the chances of improvement are less.

After 4–6 weeks, the patient can expect to see a reduction in hair loss. It will take 4 months for any hair regrowth to be seen, and some dermatologists suggest continuing use for 1 year before abandoning treatment. Initially, the new hair will be soft and downy, but it should gradually thicken to become like normal hair in texture and appearance.

Application

The product should be applied twice daily to the dry scalp and lightly massaged into the affected area. The hair should be clean and dry, and the lotion or foam should be left to dry naturally. The hair should not be washed for at least 1 h after using the lotion.

Caution

Irritant and allergic reactions to the drug or other ingredients (such as propylene glycol in the lotion) sometimes occur. A small amount (≈1.5%) of the drug is absorbed systemically, and there is the theoretical possibility of a hypotensive effect, but this appears to be unlikely in practice. *Minoxidil* is also known to cause a reflex increase in heart rate. While this is a theoretical risk where such small amounts of the drug are involved, tachycardia and palpitations have occasionally been reported. The manufacturers advise against the use of *minoxidil* in anyone with hypertension, angina or heart disease without first checking with the patient's doctor. Although no specific problems have been reported, the manufacturers advise against use when pregnant or breastfeeding.

It is important to explain to patients that they will need to make a long-term commitment to the treatment should it be successful. Treatment must be continued indefinitely to maintain an effect; new hair growth will fall out 2–3 months after the treatment is stopped. *Minoxidil* should not be used in alopecia areata or in hair loss related to pregnancy or menopause.

Note: The Cochrane reviews and NICE guidelines do not have a date as these are often updated. The most up-to-date version should be consulted.

Section	CKS (`https://cks.nice.org.uk`)	NHS Health A–Z NHS Medicines A–Z (`www.nhs.uk`)	NICE guideline (`www.nice.org.uk`)	Other resources/references
Lower urinary tract symptoms	☑	☑ Prostate problems	• Lower urinary tract symptoms in men: management, CG97	• Cochrane review: serenoa repens (saw grass) for benign prostatic hyperplasia
Erectile dysfunction	☑	☑ Erectile dysfunction (impotence) ☑ Sildenafil		• British Society for Sexual Medicine (2018). Guidelines on the management of Erectile Dysfunction, `http://www.bssm.org.uk/resources/` (Accessed 22 February 2022)
Hair loss	☑Alopecia – androgenic Alopecia, androgenetic – male ☑ Alopecia, androgenetic – female ☑ Alopecia areata	☑ Hair loss		• Primary Care Dermatology Society. Clinical Guidance: Alopecia – male and female pattern (last updated November 2021). `https://www.pcds.org.uk/clinical-guidance/alopecia-male-and-female-pattern-alopecia` (Accessed 22 February 2022)

CHAPTER 8

Older People, Frailty and Falls Prevention

One in three people aged 65 years and over falls at least once each year; this increases in those aged 80 years and over, where one in two people falls at least once each year. Some of these falls result in lacerations, brain injury or fractures. About 5% of falls in older people who live in the community result in a fracture or hospitalisation. Almost two thirds of these fall-related admissions to hospital are in those aged over 80. When pharmacists think about preventing falls, they often think first about how medicines might be involved. However, although many falls are associated with polypharmacy, the use of sedative drugs, such as benzodiazepines, and drugs that can cause postural hypotension, such as antihypertensives, the cause is usually multifactorial. Understanding the bigger picture of what happens during ageing and the development of frailty and the contributory factors for risk of falling is crucial. In responding to symptoms presented by older people, you need to be aware of those that may reflect the progressive development of frailty alongside those that predispose to falls. This chapter provides an overview of frailty and the risk of falls, as well as simple guidance that the pharmacist can offer to patients alongside helpful resources.

FRAILTY

'Frailty' is a term that is often misunderstood; it refers to an older patient's mental and physical resilience and their capacity to recover and bounce back after illness or injury. The gradual decline in musculoskeletal and endocrine systems, as well as

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immune system changes, and long-standing inflammation are all thought to contribute so frailty is now acknowledged as a health condition in its own right. Around 10% of people aged over 65 live with frailty, rising to 25–50% for those aged over 85. Although many older people have multiple chronic health conditions, frailty can also be present in someone with no other diagnosed health conditions. Older people who are living with frailty may not perceive themselves to be 'frail' but often acknowledge that they have 'slowed down' and frequently feel very tired.

Key characteristics of frailty to bear in mind when an older person is asking for your advice about symptoms are:

- Slow gait speed
- Weak grip strength and/or having some difficulty in getting up from sitting down and in standing
- Low physical activity level
- Fatigue
- Low weight (unintended weight loss)

Since 2017, the general practitioner (GP) contract in England has included a payment for identifying and managing patients over 65 years of age living with frailty. Similar initiatives are underway in Scotland and Wales. Many practices use a tool for the purpose of identification called the Electronic Frailty Index which pulls information together on related clinical conditions and associated events from the GP clinical record. However, these systems are not foolproof and also rely on accurate clinical records, so if a pharmacist suspects frailty, with associated risk of falls, they may wish to advise the GP practice of their concerns.

PREVENTING FALLS

Symptoms and signs that may indicate risk of falls include:

- Urinary symptoms, such as urinary frequency, urinary urgency, not getting to the toilet quickly enough or having to get up at night to pass urine. Having to rush to the toilet can make a trip or fall more likely.
- Dizzy spells or feeling faint.

Specific medicines that have been implicated include antihypertensives and benzodiazepines. Something that is frequently overlooked in older people is the role of alcohol in falls and the possibility of problem drinking may need to be tactfully explored. Arthritis, diabetes, stroke, syncope and Parkinson's disease can affect mobility and balance; hence, they can contribute to the risk of falls. Depression and cognitive impairment are also associated with falls.

Box 8.1 Age UK's advice to older people on preventing falls (adapted):

- Check walking speed – are you slowing down?
- Look after your feet – wear appropriate footwear
- Stay active or become more active
- Look after your eyes – get regular eye check-ups
- Get your medicines reviewed
- Make your home safe – consider fitting a grab rail if you have steps at your front or back door
- Look after your hearing – do you need a hearing aid?

Older people can help to protect themselves against the likelihood of falling by taking as many of the simple measures described in Box 8.1 as they can. Explaining why each of these is beneficial is an important role for pharmacy teams as part of their healthy living work.

WALKING SPEED AND THE SIGNIFICANCE OF SLOWING-DOWN

The slowing-down process of later life affects balance and also results in weaker muscles, both of which are important in preventing falling. The extent of 'slowing-down' can be simply measured by three tests, namely the Walking Speed Test, the Timed Up and Go Test and the Turn 180 Degree Test.

- The Walking Speed Test can easily be done by the patient themselves and measures, in seconds, how long it takes them to walk 4 metres. Taking longer than 5 s indicates that they are affected by the slowing-down process. Walking slowly may be due to other reasons, such as arthritis, but the test gives a good indication of general fitness.
- The Timed Up and Go Test measures, in seconds, the time taken to stand up from a standard chair, walk a distance of 3 metres, turn, walk back to the chair and sit down. Research indicated that a score of 12–15 s or more has been shown to indicate high risk of falls in older people.
- The Turn 180 Degree Test asks the person to stand up and step around until they are facing the opposite direction. If the person takes more than four steps, further assessment should be considered.

FOOTWEAR

Shoes that fit well protect and support feet and can preserve and improve balance and stability. Poorly fitting shoes or slippers can cause trips and falls. Lace-up or Velcro-fastening shoes give more support than slip-ons. Advice to patients on footwear is as follows:

- Make sure your shoes fit well and do not have a tendency to slip off.
- Well-cushioned shoes offer comfort and support.
- Avoid sandals with little support and shoes with high heels.
- In the house, wear slippers that have a good grip and that fasten and stay on properly.
- Always wear shoes or slippers, and never walk indoors barefoot, in socks or in tights.
- Wear boots or shoes with good grip on the soles. Rubber snow/ice grips that attach to outdoor shoes are very effective.

EYESIGHT AND BALANCE

Eyesight is an important factor in maintaining balance and coordination. Some eye conditions, such as macular degeneration, glaucoma and cataracts, increase with age and highlight the importance of early detection. Get eyes and glasses checked at least every 2 years. Combined sight and hearing problems can make it more difficult to maintain balance.

KEEPING PHYSICALLY ACTIVE

Impaired balance and muscle weakness caused by ageing and lack of use are the most prevalent modifiable risk factors for falls, and therapeutic exercise is the best-tested intervention. There is strong evidence from randomised controlled trials that group exercise classes and exercises individually delivered at home, usually containing some balance and strength training, reduce falls, as does Tai Chi. Falls prevention exercise needs to focus on strengthening leg and ankle muscles and challenging balance. Activities should include resistance activities using the upper body and exercises done while standing; falls prevention cannot be achieved solely through chair-based programmes and seated gym machines.

To get started, minimising the amount of time spent sitting down for extended periods is crucial. Some older people are known to spend 9 hours or more each day sitting. Getting up every 30 min and spending a few minutes standing or walking is a simple habit that can be established. Measures to achieve this include:

- Standing or walking around when on the phone
- Taking a walk break with every coffee or tea break
- Getting off the bus one stop early to build in a few minutes' walking
- Standing up and moving during TV advert breaks
- Going outside and doing short bursts of weeding or plant watering

The next aim would be to build up to about 30-min activity on three to five occasions a week that gently raises heart rate and breathing rate and makes the person feel warmer. Besides cardiovascular exercise, it is important to improve muscle strength by activities ('resistance exercises') on at least 2 days a week, such as:

- Carrying or moving loads, such as groceries
- Gardening jobs, such as pushing a lawn mower, digging or collecting grass and leaves
- Activities that involve stepping and jumping, such as dancing
- Chair-based exercises

Advise patients to make sure they know about local opportunities for suitable exercise, including walking/rambling groups, Tai Chi and exercise classes designed for older people. The pharmacy should have a compendium of what is available locally in order to signpost patients to these.

MEDICINES

If the patient has their repeat prescriptions dispensed at your pharmacy, you can quickly check the Patient Medicines Record. If they do not, you may be able to check their medicine list on the National Health Service (NHS) care record and of course you can ask them directly. Box 8.2 lists medicines to look out for in the medicine list.

NUTRITION AND FALLS

People are at risk of vitamin D deficiency if they are aged over 65 years, or are not exposed to much sunlight (because they are confined indoors for long periods or because they wear clothes that cover the whole body). Vitamin D deficiency has been associated with osteopenia (thin bones) and with muscle weakness, poor neuromuscular coordination and falls. For a person with adequate calcium intake (700 mg/day)

Box 8.2 Medicines that can increase the risk of falling

Medicines that cause adverse effects on the central nervous system or that cause postural hypotension can increase the risk of falls; these include:

- Sedatives
- Hypnotics
- Anxiolytics
- Antihypertensives
- Diuretics
- Any drugs with antimuscarinic effects
- Antipsychotics
- Antinauseants
- Antidepressants
- Antiarrhythmics
- Anticonvulsants

but who is not exposed to much sunlight, vitamin D, 400 international units (IU) without calcium is recommended. If calcium intake is inadequate, 10 micrograms (400 IU) of vitamin D with at least 1000 mg of calcium daily is recommended. For elderly people who are housebound or living in a nursing home, 20 micrograms (800 IU) of vitamin D with at least 1000 mg of calcium daily is sometimes recommended. This dose has been shown to reduce falls and fractures, although the evidence is of low quality.

SAFETY AT HOME

Ask the patient these questions:

- Do you have good lighting, especially on the stairs?
- Are stairs and steps clutter free?
- Do you have handrails; are they on both sides of the stairs?
- Do you have a nightlight in the bedroom or a torch by the bed in case you need to get up in the night?
- Are your floors clear of trailing wires, wrinkled or fraying carpets or anything else that you might trip or slip on?
- Do you have a handrail in the bath and a non-slip bath mat?

- Do you always use a step ladder to reach high places? Always ask someone to help you if you are using a ladder, never stand on a chair.
- Do you keep your garden paths clear and free from moss?
- Does your pet wear a collar with a bell? It is important to be aware of where they are when you are moving about.

If you are visiting patients for supply of medication, or for help with medicines taking, these are things the pharmacist can assess and provide advice on, or refer for support from social services or voluntary organisations.

MINIMISING RISK DURING WINTER

- Consider fitting a grab rail if there are steps at the front or back door.
- Wear boots or shoes with good grip on the soles. Rubber snow/ice grips that attach to outdoor shoes are very effective.
- Have some food supplies in a cupboard or freezer in case it is not possible to go out for a few days.
- Order repeat prescriptions in plenty of time, particularly if bad weather is forecast. If the patient usually collects their medicines, consider getting them delivered during the winter months.

REFERRAL TO GENERAL PRACTITIONER OR TO FALLS PREVENTION SERVICES

Many areas around the UK now have NHS falls prevention services. These can provide a multifactorial falls risk assessment by appropriately skilled and experienced clinicians to all people aged 65 years and over who have had several falls in the last 12 months, or have presented for medical attention following a fall, or who cannot perform, or perform poorly on, the Walking Speed Test, and/or Timed Up and Go Test and/or the Turn 180 Degree Test. It is useful for the pharmacist to know how patients can get access to these services in their locality. Depending on local commissioning arrangements, they may be able to refer patients directly to the service. If not, they should consider referring patients to the GP surgery for further assessment.

RESOURCES

Weblinks all accessed 22 February 2022.

It is useful to provide verbal and written information on ‘healthy ageing’ and reducing the risk of falls:

- Age UK – *A Practical Guide to Healthy Ageing*. From: `www.england.nhs.uk/publication/practical-guide-to-healthy-ageing`
- The Chartered Society of Physiotherapy booklet *Get up and go - a guide to staying steady*. `www.csp.org.uk`
- The Age UK information guide *Staying steady: Keep active and reduce your risk of falling*. From: `www.ageuk.org.uk` NHS A to Z Health Guidance of falls prevention at `www.nhs.uk/conditions/falls/prevention`

FURTHER READING

National Institute for Health and Care Excellence (NICE). Falls in older people: assessing risk and prevention. Clinical Guideline 161, 2013 (regularly updated).

Clinical Knowledge Summaries (CKS). Falls: Risk Assessment. `https://cks.nice.org.uk/topics/falls-risk-assessment/`

CHAPTER 9

Eye and Ear Problems

This chapter deals with two common presentations of eye problems – red eye and dry eye – and the types and causes that are suitable for management by pharmacists and those that require referral. A good 'rule of thumb' is that if eye pain and change in vision are significant features, patients should be referred to the general practitioner (GP) surgery, or to the optometrist if local arrangements are in place. In some parts of the United Kingdom (UK), optometrists (opticians) manage these patients and have direct access to eye clinics in secondary care if onward referral is needed. You should make yourself aware of these local care pathways, if relevant. Many other common eye problems are now managed by optometrists, and in many instances the patient can be directed to them for advice and care.

WORKING IN PARTNERSHIP WITH OPTOMETRISTS

The clinical role of the optometrist in primary care has, like that of the community pharmacist, been recognised and extended in recent years as part of managing the demand for GP practice appointments. Referrals from GPs to optometrists have become a formal National Health Service (NHS) process, with optometrists referring onto hospital eye clinics where necessary.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

Referrals between pharmacists and optometrists can include:

- Pharmacist refers patient to optometrist for eye examination, diagnosis and advice.
- Optometrist refers to pharmacist for advice on treatment options and selection.
- Optometrist recommends a treatment and refers to pharmacist to obtain it.

Getting to know your local optometrist(s) will make the path smoother for effective referrals and can help to ensure that treatments recommended by the optometrist are stocked by the pharmacy. When you consider referring a patient to their optometrist, it is suggested that you telephone them to check availability of examination.

Some areas of the UK have NHS community optometry services for minor eye conditions. Here, the optometrist makes a diagnosis and refers the patient to the pharmacy to either purchase the recommended treatment or have it supplied on the NHS from a locally agreed list of medicines. Such schemes of supply are intended to reduce health inequalities in primary care by providing NHS access to medicines for low-income families to enable self-care of minor eye conditions. The optometrist has responsibility for the choice of treatment and the pharmacist dispenses it.

EYE PROBLEMS: THE RED EYE

Conjunctivitis is a common condition resulting in red eyes, caused by infection, allergy or irritation. Other more serious types of red eyes, which are usually more painful, also need to be considered. Notes on some of the causes of painful red eyes are provided in the following text.

What you should know

- Causes of red eye
  - Conjunctivitis
    - Infective
    - Allergic
  - Blepharitis
- Other causes – painful red eye
  - Corneal ulcers
  - Keratitis

Iritis/uveitis
Glaucoma
One or both eyes affected?
Duration of symptoms
What is the appearance of the eye?
Pain, gritty feeling, photophobia?
Is vision affected?
Any discharge from the eye(s) – purulent, watery?
Does the patient wear contact lenses?

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Conjunctivitis

The term conjunctivitis describes inflammation of the conjunctiva, the membrane covering the anterior white part of the eye (sclera) and the inside of the eyelids (see Figure 9.1). It can become inflamed due to infection, allergy or irritation. The two

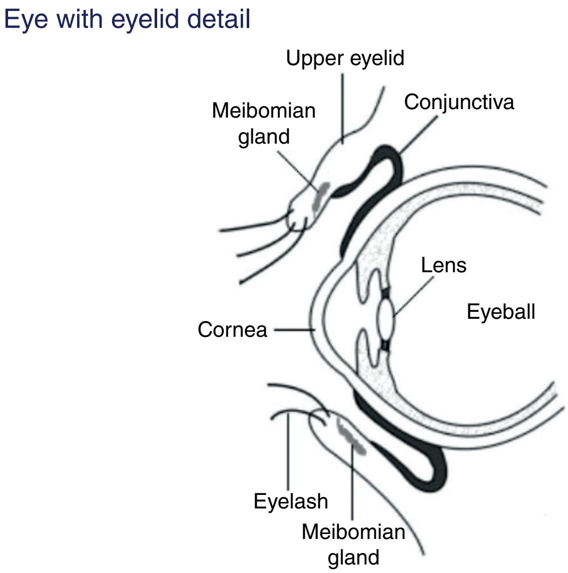
Eye with eyelid detail
Upper eyelid
Meibomian gland
Conjunctiva
Lens
Eyeball
Cornea
Eyelash
Meibomian gland

FIGURE 9.1 The eye and associated structures. *Source:* Bruce James, Anthony Bron (2012), Reproduced with permission of John Wiley & Sons.

main features are eye redness, due to dilatation of blood vessels over the sclera, and discharge; the conjunctiva on the inside of the eyelids contains cells that produce mucus and glands that produce tears, and when inflamed more of these are secreted.

Infective conjunctivitis

Both bacteria and viruses can cause conjunctivitis, the latter being the most common cause of infectious conjunctivitis. It is difficult to differentiate clinically between viral and bacterial conjunctivitis. See Figure 9.2 for the typical appearance of infective conjunctivitis. Viral conjunctivitis may be accompanied by other signs of viral respiratory tract infection, such as cough and cold. The main symptoms of conjunctivitis, apart from redness or 'pinkness', are an uncomfortable gritty sensation and a discharge. It is not a painful condition. The discharge is sticky and purulent in bacterial infections and more watery in viral infections. Only one eye may be affected initially, but symptoms usually affect both eyes within a few hours. If symptoms of conjunctivitis are confined to one eye, this suggests the possible presence of a foreign body or another condition accounting for the red eye. A systematic review found that a purulent discharge with sticking together of eyelids on waking and lack of itching were stronger factors associated with bacterial conjunctivitis compared with the other types. Itching was the symptom most strongly related to allergic conjunctivitis.

All patients with conjunctivitis who are experiencing pain in the eye(s) should be referred to the GP surgery. Also anyone who says their vision is affected (other than transient blurring, cleared by blinking, due to the discharge) should be referred for urgent assessment.

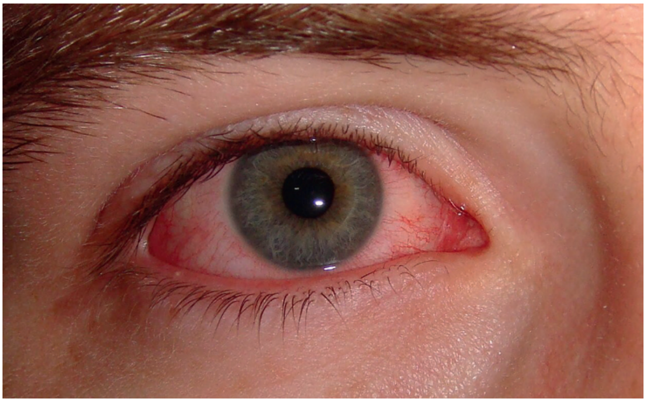

FIGURE 9.2 Typical appearance of bilateral infective conjunctivitis. *Source:* P33tr/Wikimedia/Public domain.

Management of infective conjunctivitis

Acute bacterial conjunctivitis is frequently self-limiting. A Cochrane systematic review found that 65% of cases of bacterial conjunctivitis resolve anyway within 2–5 days when treated with placebo. This review concluded that use of antibiotic eye drops is associated with 'modestly improved' rates of both clinical and microbiological remission and recommended that 'use of antibiotic eye drops should be considered in order to speed the resolution of symptoms and infection'.

'Watchful waiting' is therefore a reasonable alternative option, particularly as many cases will be viral. Systematic reviews show no increased rate of serious harm with placebo, compared with antibiotics. If there is a sticky discharge, gentle cleansing of the outside of affected eye(s) with cotton wool soaked in water can be recommended regardless of whether treatment is being suggested.

Chloramphenicol eye drops 0.5% every 2 h for the first 24 h and then four times daily, or *chloramphenicol eye ointment 1%,* can be supplied over-the-counter (OTC) as a pharmacy medicine (P) for the treatment of acute bacterial conjunctivitis in adults and children aged 2 years or over. Symptoms usually settle in a few days. Treatment for 5 days is usually adequate, but treatment should be continued for 48 h after resolution of symptoms.

People with infective conjunctivitis or those treating someone who is infected should wash their hands regularly and avoid sharing towels and pillows, as sometimes the infection can be contagious. Contact lenses should not be worn until the infection has completely cleared and until 24 h after any treatment has been completed. This is important as if lenses are left in with bacterial conjunctivitis, serious ulceration of the eye can occur.

If conjunctivitis symptoms persist for longer than 1 week, further investigation is needed, and referral to the GP surgery is indicated. Patients should be advised that medical consultation is urgently needed if the eye(s) become markedly painful, there is photophobia (discomfort to light) or marked redness or vision is affected.

Other conditions with similar symptoms

Allergic conjunctivitis

This produces irritation and a watery discharge. Itchiness may be a significant feature, and sometimes, the conjunctiva over the whites of the eyes are very swollen or 'oedematous'. It typically occurs in the hay fever season, but can occur at other times in some people, e.g. due to pet allergy. It is sometimes difficult to differentiate between infection and allergy, and therefore referral is needed if there is doubt.

Management of allergic conjunctivitis

In allergic conjunctivitis due to hay fever, if there are other symptoms related to allergic rhinitis (e.g. sneezing, runny nose and nasal blockage), oral antihistamines and nasal corticosteroids will treat most of them and may relieve eye symptoms (see Chapter 1: Respiratory Problems: Allergic rhinitis (hay fever)).

For predominant or significant eye symptoms, antihistamine drops can be helpful. Some preparations are combined with a sympathomimetic decongestant. They should not be used for more than 7 days.

If there is prolonged exposure to allergens in allergic conjunctivitis, then the continued use of a topical antihistamine becomes inappropriate, and it may be better to recommend drops containing a mast cell stabiliser, such as sodium cromoglicate or lodoxamide. These drugs help to treat allergic reactions by blocking the attachment of immunoglobulin/allergen complexes to mast cells.

Sodium cromoglicate 2% eye drops can be recommended OTC (pharmacy medicine [P] and general sale list [GSL]) for the treatment of both seasonal and perennial allergic conjunctivitis (not suitable for children younger than 1 year of age). Several proprietary brands are available. Warn patients that they might experience a mild transient burning or stinging sensation after administration. The drops should be used four times a day and are relatively quick-acting at relieving symptoms, but should be continued regularly to prevent symptoms returning. Contact lens wearers may need to leave lenses out while using them (see specific product details). They remain effective when used for long periods of time, but some of the product instructions recommend seeing a doctor if used continuously for more than 14 days.

Lodoxamide is used in a similar way and can be supplied as a P medicine for children aged 4 years and over.

Blepharitis

Blepharitis is inflammation of the margin of the eyelids with characteristic symptoms of itchy, stinging and sticky eyes. Some patients develop meibomian gland dysfunction with blockage or impairment of meibomian secretions, which stops the lipid component of the tear film working efficiently and contributes to dry eye symptoms. See Figure 9.1 which illustrates the anatomical position of the meibomian glands.

The symptoms and appearance can be similar to conjunctivitis and the conditions are often confused, although blepharitis involves the eyelids and eyelashes rather than the conjunctiva. It tends to be a chronic condition, and often there is an underlying chronic infection. See Figure 9.3 which shows the typical appearance of chronic blepharitis. Treatment can control symptoms and prevent complications; however, periodic relapses and exacerbations can occur. In some patients, there is an association with dry eye syndrome, acne rosacea or seborrhoeic dermatitis (see Chapter 4: Skin Conditions).

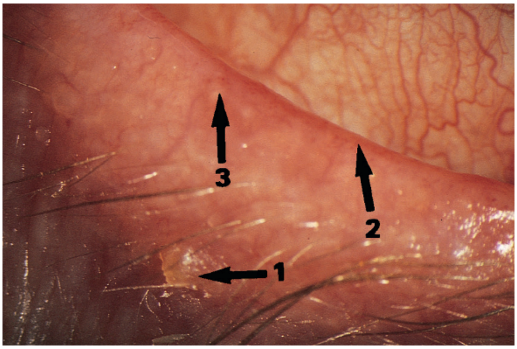

FIGURE 9.3 Typical appearance of chronic blepharitis.

Management of blepharitis

Management of blepharitis involves advice on good eyelid hygiene, including advice to avoid eye make-up. Patients are usually given an instruction sheet on eyelid hygiene (such as that from NHS Health A–Z). This involves placing a warm cotton wool pad or flannel on the closed eyes for 10 min, which helps to loosen meibomian secretions (by warming them to make them runnier), massaging the eyelids for 30 s and subsequently cleaning the eyelids by wetting a cloth or cotton bud with cleanser (e.g. baby shampoo diluted 1:10 with warm water or bicarbonate solution) and wiping along the lid margins. This washing helps clear the debris and reduces inflammation of the eyelid margin. An alternative is the use of an eye mask heated in a microwave instead of the cotton wool/flannel.

Sometimes, topical antibiotics are used for flare-ups of the condition (prescription needed), and long-term treatment is often required (6 weeks or more). Although pharmacists can advise and support patients who have this common condition, confirmation of the diagnosis and initiation of treatment are best done by the optometrist, at the GP surgery, or by eye specialists.

Subconjunctival haemorrhage

A subconjunctival haemorrhage is a common cause of a red eye caused by a small bleed behind the membrane layer of the conjunctiva resulting in redness over the white of the eye (sclera). It can look very alarming, but it causes no discomfort and is usually harmless. See Figure 9.4 which shows the typical appearance of a subconjunctival haemorrhage. The redness usually clears within 1–2 weeks. It is most commonly a spontaneous, unexplained occurrence, and patients can usually simply be reassured. The only reasons to refer them to the GP surgery would be if it was painful, if high blood pressure was suspected (e.g. no recent check-up) or if they had unexplained bleeding or bruising elsewhere.

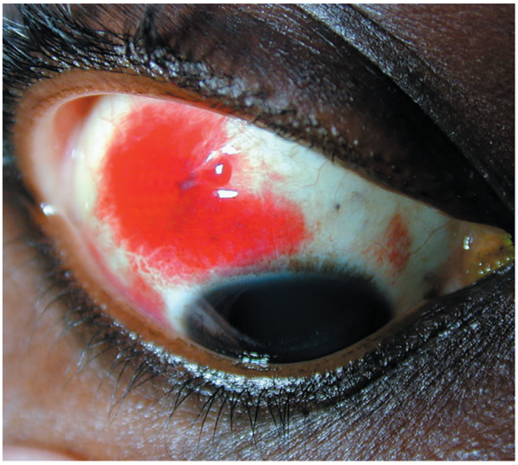

FIGURE 9.4 Typical appearance of subconjunctival haemorrhage.

Painful eye conditions

Corneal ulcers, keratitis

Corneal ulcers may be due to an infection or a traumatic abrasion. The main symptom is pain, as the cornea is exquisitely sensitive. There may be surrounding scleral inflammation. An abrasion can be caused by contact lenses, but wearers may not experience as much pain as constant contact reduces the pain sensation. Early diagnosis is important, as the cornea can become permanently scarred, with loss of sight. The cornea is the transparent covering over the front of the eye, and early ulcers may not be visible without staining. This involves examining the eye under ultraviolet light after instilling fluorescein drops, which will colour and highlight an otherwise invisible ulcer.

Keratitis is inflammation of the cornea, often with infection. It often presents with a unilateral, acutely painful red eye, and the patient complains of discomfort from bright light (photophobia). Sometimes, it is caused by ultraviolet light damage from a welding torch or from sunbeds. It may be caused by herpes simplex virus or, occasionally, a bacterial infection. If herpes virus is the cause, there is usually an associated history of cold sores. Acanthamoeba keratitis is sometimes seen in soft contact lens wearers and is associated with poor lens hygiene, extended wear and swimming while wearing lenses. It can cause serious problems and can be difficult to treat.

Management of corneal ulcers and keratitis

If these conditions are suspected, urgent referral is indicated to the optometrist or GP (if out of hours, then to an eye hospital or accident and emergency [A&E] department). A common cause of corneal ulcers is a foreign body caught under the eyelid, and these are usually easy to remove. Superficial ulcers caused by such trauma will usually heal quickly. Simply leaving the lens out will usually heal ulcers caused by contact lenses. Often a short course of antibiotic eye drops or ointment is also supplied to prevent secondary infection. Severe ulcers and keratitis caused by infection require assessment and treatment by specialists at an eye hospital.

Uveitis (iritis)

Uveitis, sometimes known as iritis, is inflammation of the iris and surrounding cilia body. It may occur in association with some forms of arthritis, sarcoidosis or tuberculosis. It sometimes occurs as an isolated event with no obvious cause. In some cases, infection seems to be the trigger. It mostly affects both eyes, but may be unilateral. The inflammation causes 'deep' eye pain, which is felt more within the eye than is the superficial gritty pain of conjunctivitis, and there is no discharge. The affected eyes are red, mostly around the cornea (circumcorneal inflammation or 'injection'), and the pupils may be contracted and possibly irregular due to muscle spasm in the iris. See Figure 9.5 which shows the typical appearance of uveitis. Blurring of vision and photophobia are common.

Management of uveitis

Untreated uveitis can cause severe eye damage and loss of vision. If suspected, urgent specialist referral is necessary. Treatment is with topical corticosteroids (sometimes oral) to reduce inflammation, often alongside eye drops to paralyse and dilate the iris.

Glaucoma

Glaucoma occurs when the pressure of the fluid within the eye becomes abnormally high. There are two main types of glaucoma where (i) it occurs suddenly or (ii) develops slowly and insidiously.

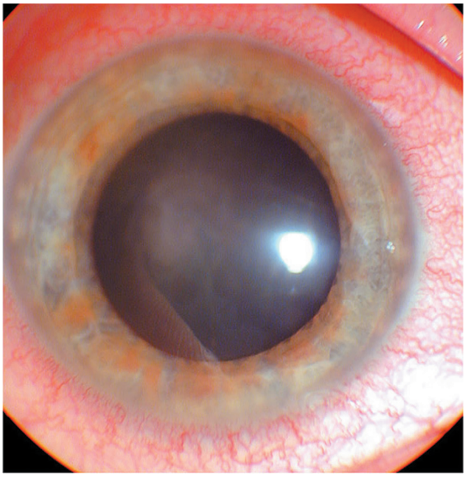

FIGURE 9.5 Typical appearance of uveitis.

It is the sudden onset type, acute angle-closure glaucoma that causes a painful red eye. In most cases, the iris folds over and blocks the drainage of fluid from the eye (it ‘closes the angle’). The pressure builds up rapidly, and the cornea swells and becomes hazy, causing impaired vision and a halo appearance around lights. It should be suspected in a person with an acute painful red eye. It is more common in Asian people, in women and in older people. People with acute glaucoma develop sudden onset headache and nausea. Vomiting is common. The pupil becomes fixed and the eye hard and tender. In older people, headache may be the main symptom, and it can sometimes be difficult to diagnose.

Management of glaucoma

Emergency hospital referral is necessary to prevent permanent loss of sight. The extreme pressure within the eye rapidly damages the optic nerve. After lowering pressure with drugs, treatment usually involves an operation or laser therapy to remove part of the iris. This lowers the pressure and should prevent it from developing again. Sometimes, the unaffected eye is also treated if it is at high risk of acute glaucoma.

Chronic or primary ‘open-angle’ glaucoma is the more common type of glaucoma that affects 2% of people aged over 40 years. This condition starts slowly and insidiously, without warning symptoms. The optic nerve is slowly damaged, which leads to loss of peripheral visual fields and blindness if not treated. Primary open-angle glaucoma can be detected by an examination at the optician. It can run in families and regular check-ups are advised if there is a family history of glaucoma, especially in those over 40 years of age. Free eye tests are available to those over the age of 40 years who have a close relative with glaucoma.

Contact lenses

There are two main types of lens: soft (hydrogel) and hard (gas permeable). Soft lenses are the most popular because of their comfort, and daily disposable contact lenses (‘dailies’) are the most commonly used in the UK. There are also two-weekly and monthly disposables, which are worn daily, cleaned and stored overnight.

Extended wear (‘night and day’) disposables are worn continuously for up to a month without taking them out for sleeping or showering. The risk of serious eye infections with overnight wear is higher than with daily wear lenses.

For all contact lenses, keeping lenses in for longer than the recommended periods of time increases the chances of complications, such as corneal ulcers, keratitis and *Acanthamoeba* keratitis infection. Rubbing against the inside of the eyelid can cause a condition called papillary conjunctivitis. Wearing contact lenses while swimming, water sports and hot-tub use can be associated with complications and should be avoided, unless the patient is wearing tight-fitting goggles. If lenses are worn for showering, the eyes should be kept firmly closed.

Contact lenses should not be worn if the patient has conjunctivitis or is using certain eye drops (they should always check the patient information leaflet). Soft contact lenses can absorb the preservative *benzalkonium chloride* used in eye drops, and this can cause irritation and inflammation of the eye. Consequently, soft lenses should not be worn when using eye drops containing this preservative.

EYE PROBLEMS: THE DRY EYE

Dry eye is common, particularly in older adults. Sometimes, the term keratoconjunctivitis sicca is used. The tear film maintains a healthy eye surface and enables clear vision. Tears are a complex mixture of water, salts, lipids, proteins and mucus. The lipids surround the tear film and help to prevent evaporation of the water, and the mucus component helps spread the tear film evenly over the surface of the eye. In dry eyes, the quantity or the composition of tears changes; either not enough salty fluid is produced by the tear glands, or tears may evaporate too quickly, or they may not spread evenly over the cornea (or a mixture of these things). Tear production diminishes with age and is affected by female hormones, so the problem is most common in older women. With an ageing population, the number of patients experiencing dry eye is increasing and in many it can be managed effectively using lifestyle measures and OTC preparations.

What you should know

Causes of dry eye
    Environment
    Medical conditions
    Medication
What are the symptoms – pain, gritty feeling, photophobia?
Is vision affected?
Does the patient wear contact lenses?

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Environment

Windy, dry climates increase tear evaporation. Long periods of time spent working at a computer screen are associated with dry eye because blinking tends to be less frequent; thus, compromising secretion of lipid-rich meibum by the meibomian glands such that redistribution of the tear film happens less often and the tear film is unstable.

Medical conditions

Patients with rheumatoid arthritis, diabetes or thyroid problems are more likely to experience dry eyes.

Medication

Antihistamines, beta blockers, chemotherapy, diuretics, hormone replacement therapy (HRT), oral contraceptives, selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) may affect the quantity and composition of tears. Preservatives in topical treatments may also contribute to dry eyes.

Symptoms

People with dry eyes may report irritated, gritty, scratchy or burning eyes, a feeling of something in their eyes, excess watering and blurred vision.

Vision

Patients with dry eyes may report experiencing some blurring of vision when they first wake up in the morning.

Contact lenses

Individuals who wear contact lenses are more likely to experience dry eyes.

When to refer

Most cases of dry eyes are mild to moderate and can be managed by the patient using self-care. Severe symptoms or those that do not improve with self-care should be referred to the GP or optometrist. Extreme cases can result in considerable discomfort and eye ulceration.

MANAGEMENT

Self-care and lifestyle measures are important. Some patients need treatment as well as lifestyle measures, depending on the cause. For most people, it is a chronic condition so it is important to explain that treatment is long-term to ensure realistic expectations.

NHS England in their ‘OTC’ policy advises GPs not to routinely prescribe preparations for dry eyes. This policy states that patients should be encouraged to manage both dry eyes and sore eyes by implementing self-care measures, such as eyelid hygiene and avoidance of environmental factors. It goes on to say that mild-to-moderate cases of dry eye syndrome or sore tired eyes can usually be treated using lubricant eye treatments that consist of a range of drops, gels and ointments that can easily be purchased OTC. This reinforces the role of the pharmacist in advising patients on what they can do to treat it themselves, such as cleaning the eyes, which products are most suitable for individual patients and when to refer to the optometrist or GP.

Self-care and lifestyle measures

1. **Using warm compresses together with lid hygiene and massage (see under the heading ‘Blepharitis’ in the earlier text):** These can be especially helpful if blepharitis or meibomian gland dysfunction is present. The warmth helps loosen meibomian secretions and can be soothing.
2. **Blinking more fully and consistently:** Set a 20-min reminder when working at the computer:
    - Stand up and look at a far object for 20 s
    - Gently close the eyes fully – count 1, 2
    - Squeeze the lids together – count 1, 2
    - Open the eyes – count 1, 2
    - Repeat the exercise five times
3. **Indoor environment:** Be aware of contributing factors and adjust them where possible:
    - Using a humidifier at home and work can help keep the air moist. Opening windows, even for a short time, will refresh and moisten the air.
    - If using a computer for long periods, position the monitor below eye level (this decreases eyelid aperture and exposes less of the eye surface to drying), and take frequent breaks (such as every 20 min) to close/blink eyes – see in the earlier text.
    - An air-conditioned environment dries the air and can make symptoms worse. It will not always be possible to change this aspect of a work environment.
4. **Outdoor environment:** Wearing sunglasses (especially of a wrap-around style) outside will help to protect the eyes from the drying effects of sun and wind.
5. **Alcohol and smoking:** Excess alcohol will aggravate dry eyes. Stopping smoking and avoiding tobacco smoke should be advised.

6. **Modify contact lens wear:** Aim to limit contact lens use to shorter periods and remove lenses when dry eye symptoms occur. Changing lens type or solution may help.
7. **Medication:** Avoid drugs known to aggravate the condition (topical antihistamine eye drops will make it worse).
8. **Omega fatty acids in the diet:** Findings from a systematic review suggested a possible role for long-chain omega-3 supplementation in managing dry eye disease. The evidence was not definitive, but some patients may wish to try including more foods rich in omega-3 fatty acids in their diet.

Eye preparations

Preparations for dry eyes aim to restore or maintain the normal amount of tears in the eye. Patients who wear contact lenses should use a preservative-free preparation.

The severity of the condition and the person's preference should guide choice:

- Drops are best for daytime use with ointments or gels reserved for use before bed, as these are most likely to cause temporary blurring of vision. Less viscous formulations are less likely to cause stinging and burning.
- For people with mild or moderate symptoms, artificial tears alone are usually sufficient.
- *Sodium chloride* (*saline*) is short-acting and suitable as 'comfort drops' or for use with contact lenses.
- *Hypromellose* is the most commonly used product, but requires frequent administration (ideally 30-min intervals initially until symptoms improve, then decreased frequency).
- The ability of *carbomers* and *polyvinyl alcohol* to cling to the eye surface and their higher viscosity may help reduce frequency of application to four times daily. They may be less well tolerated.
- Ocular lubricants containing *sodium hyaluronate*, *hydroxypropyl guar*, or *carmellose sodium* can be used for moderate-to-severe dry eye, but are generally used after a trial of other options.
- Some patients develop intolerance to the preservatives in eye drops. The preservative that most often causes eye irritation or allergy is *benzalkonium chloride.*
- If a product causes irritation or if soft contact lenses are worn, consider switching to one that is preservative-free – *hypromellose, carbomers*, *polyvinyl alcohol*, *sodium chloride, carmellose sodium*, *hydroxyethyl cellulose* and *sodium hyaluronate* are available without preservatives.

- If more than four to six applications are used daily, consider using a preservative-free product, as the risk of irritation from the preservative increases with the frequency of dosing.
- Eye ointments containing *soft paraffin* can be used in addition to other options to lubricate the eye surface, especially in cases of recurrent corneal epithelial erosion. They may cause temporary visual disturbance and are best suited for application before sleep, as they are long-acting.
- Ointments should not be used during contact lens wear.
- Eye ointments can aggravate blepharitis; if so, careful lid cleaning in the morning will help.

EYE PROBLEMS IN PRACTICE

Case 1

Paul Greet is a man in his 40s who comes into your pharmacy on his way home from work wanting treatment for a stye. He asks to speak to the pharmacist. It is Friday night and you are just about to close. Your pharmacy is in the city centre. He asks if you would make him an emergency supply of *chloramphenicol eye ointment*, which his doctor usually prescribes for him. OTC *chloramphenicol* is licensed only for the treatment of acute bacterial conjunctivitis. What would you do?

The pharmacist's view

This sort of dilemma sometimes happens. Unless this man's GP surgery is open in the morning, he will not be able to get a prescription until Monday (unless he goes to A&E department or talks to the out-of-hours service). In areas where community pharmacies can supply *chloramphenicol eye ointment* through a patient group direction, the pharmacist can, following a protocol, supply treatment for a stye (hordeolum) where appropriate.

As for making an emergency supply, it is up to the pharmacist to decide whether this constitutes an emergency, which requires the pharmacist to satisfy himself or herself that 'there is an immediate need for the POM requested to be sold or supplied and it is impracticable in the circumstances to obtain a prescription without undue delay'. Patients' and pharmacists' views of what constitutes an emergency do not always coincide. A possible framework for making such decisions is shown as follows.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/ not supplying	What would I do if the patient were me/my spouse/ my parent/my child? Is this decision different from the one I have reached for the patient? Why?

However, the pharmacist will take into account the consequences of not making a supply, including suffering and any potential harm from delayed treatment. If, in the pharmacist's view, the circumstances constitute an emergency, the requirements for emergency supplies are set out in *Medicines, Ethics and Practice* (Royal Pharmaceutical Society).

The doctor's view

Most styes are self-limiting. A stye can be an external one: a localised infection of the hair follicles of the eyelid margin or an internal stye, an infection of meibomian glands on the inner surface of the lid. See Figure 9.6 for the typical appearance of this condition.

Staphylococcus aureus is the infection responsible in nearly all cases. If left untreated, the stye will point and discharge and resolve spontaneously. The stye

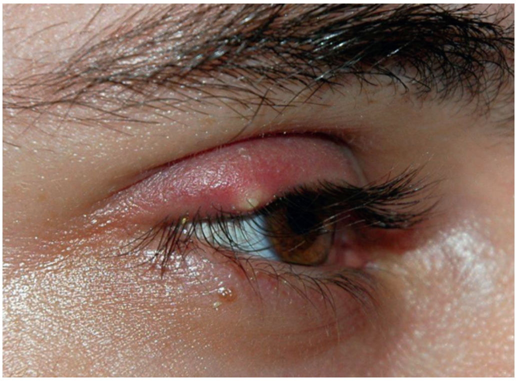

FIGURE 9.6 Typical appearance of a stye. *Source:* Andre Riemann/Wikimedia commons/Public domain.

can be encouraged to point by the regular application of heat. A way of doing this would be to dip a cotton wool bud in hot water and then gently press it against the stye. Hot-spoon bathing using a wooden spoon heated in warm water is an old-fashioned alternative (with care to avoid burning). Often *chloramphenicol ointment* is prescribed more to protect the eye from any discharge rather than actually treat the stye. It would probably help Paul Greet to understand the natural course of styes; although if he has used *chloramphenicol ointment* in the past, he may not be happy without a further supply this time.

It would be useful for his GP to review him if the styes have been recurrent. Sometimes, recurrent styes can be associated with blepharitis, diabetes or raised lipids.

If there is inflammation surrounding the stye on the eyelid, then this would be a reason for referral to the GP, as systemic antibiotics may be indicated. Very occasionally, styes need incision and drainage to speed up their resolution.

Case 2

Kate Cosattis is a mum in her late 30s who wants advice about a problem with her daughter's eyes. Both of Ellie's eyes were sticky in the morning with 'yellow stuff' yesterday and today. The child is 18 months old, and her eyes seem to be bothering her because she has been rubbing them.

The pharmacist's view

I could not recommend *chloramphenicol* for this child because she is under 2 years of age. In any case, I am not convinced that it offers any benefit in infective conjunctivitis in children. So I explained to Kate that if she gently bathed the eyes to keep them clean over the next few days, it was likely that the infection would go by itself. She wanted to get some treatment, so I referred her to the GP practice.

The doctor's view

I agree with the pharmacist's opinion. The available evidence suggests that there is only moderate benefit from prescribing *chloramphenicol eye drops* compared with placebo drops even in those who are subsequently shown to have bacterial infections on laboratory testing. In other words, most infections resolve spontaneously. In Ellie's situation, it would be important to find out her mum's ideas, concerns and expectations about conjunctivitis and its management. She may be very insistent on a prescription, and many GPs would be persuaded by her wishes and issue one, especially given the time pressures of a consultation. If possible, time spent listening to her concerns, and addressing them could avoid a prescription and a rerun of this scenario in the future.

The parent's view

I was not happy with the pharmacist. I come here a lot for advice and usually he's really good. But this time he told me that the infection would probably go away by itself without treatment. And in any case he said he could not sell me anything, and I would have to take Ellie to the doctor. I was worried that the infection might get worse or even damage Ellie's eyesight for the future. Anyway, the doctor gave me some eye ointment and the infection cleared up in a few days. I do not see why the pharmacist could not have done the same.

COMMON EAR PROBLEMS

Although the treatment of common ear problems is usually straightforward, it does depend on accurate diagnosis and may require a prescription. It may not always be possible to determine the problem from the story. A key issue for the pharmacist is the potential risk from not examining the inside of the ear and seeing how the ear looks. An increasing number of pharmacists are now trained in clinical examination of the ear with an auroscope (also known as an otoscope). If not able to do this, diagnosis is sometimes best made by the doctor. Ear problems that commonly present to the pharmacy are described in the following text.

What you need to know

Earwax
Otitis externa (OE)
Otitis media
Glue ear
One or both ears affected?
Symptoms – pain, itching
Is there any hearing loss?

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Earwax

Earwax is a normal physiological substance in the ear canal. It is produced by ceruminous glands, which are modified sweat glands lying within the ear canal. The wax (cerumen) aids removal of skin debris from the ear canal and cleans, lubricates and protects the lining of the ear canal; it also has antibacterial properties. Wax is usually soft and works its way out of the ear, but excessive build-up of hard earwax with hair and skin debris can develop in some people. Cotton wool buds should never be poked into the ear to clean or clear it as wax is pushed further in and it is possible to damage the eardrum.

Symptoms

Wax blocking the ear is one of the commonest causes of temporary deafness. It may also cause discomfort and a sensation that the ear is blocked. Rarely, it can cause dizziness and nausea.

Management of earwax

Ear drops

The ear can often be unblocked by using ear drops, which soften wax and this sometimes allow it to run out. Ideally, the ear should be examined prior to treatment. Many people will have had recurrent problems with wax, recognise the symptoms and will purchase these drops from the pharmacy. If this is not adequate to clear the problem, the ear drops will usually have softened the wax enough to enable ear irrigation. Some pharmacists (and optometrists) now offer a service to remove wax. In some people with complicated ear problems, suction clearance of wax is advised by an ear specialist.

Recommendations for use of ear drops to soften earwax

- Do not advise drops if you suspect the person has a perforated tympanic membrane (usually determined from previous history).
- Prescribe ear drops for 3–5 days initially, to soften wax and aid removal, if this proves necessary.
- *Olive oil* or *almond oil* drops can be used three to four times daily (do not prescribe almond oil ear drops to anyone who is allergic to almonds).
- *Sodium bicarbonate 5% ear drops* can also be used.

- Warm the drops before using them (e.g. let the bottle stand in the room for about half an hour or place the bottle in warm water).
- Pour a few drops into the affected ear.
- Lie with the affected ear uppermost when putting in drops.
- Stay like this for 2–3 min to allow the drops to soak into the ear and the earwax.
- Warn the person that instilling ear drops may cause transient hearing loss, discomfort, dizziness and irritation of the skin.

A systematic review found that oil-based and water-based preparations are equally effective at clearing earwax and for softening earwax before ear irrigation.

Prevention

In people with recurrent problems due to earwax, regular use of ear drops may be helpful to prevent build-up of wax. Some people recommend once weekly.

Ear irrigation

If any wax remains despite treatment to soften the wax for 3–5 days, referral for irrigation may be advisable. Some GP surgeries do not provide this service and the patient may be directed to 'private' healthcare. An electronic ear irrigator is used, which directs a regulated pressurised flow of water at body temperature into the ear. Sometimes, manual removal is required, using a probe.

Otitis externa

Otitis externa (OE) involves inflammation and infection of the skin in the ear canal. One in ten people experiences it at some time in their life and peak incidence is at 7–12 years. OE may be diffuse or localised. In the former, the main symptom is discomfort and itch, in the latter, severe ear pain. Sometimes, the ear canal is a site of eczema, which causes OE and may become secondarily infected.

OE can be precipitated by ear trauma (scratching, foreign bodies and use of cotton buds), swimming (especially in dirty or polluted water), chemicals (hairspray, hair dyes, shampoo and drops for earwax) and skin conditions (eczema, seborrhoeic dermatitis and psoriasis). OE is five times more common in swimmers than in non-swimmers. It is more frequent in hot and humid environments and is 10 times more common in summer than winter.

Symptoms

The symptoms of OE are usually discomfort, itchiness and discharge. A boil (furuncle) can cause intense pain because of pressure in the confined skin and cartilage of the ear canal. Referral to the doctor may be necessary for accurate diagnosis.

It is possible that the same symptoms can arise from a middle ear infection (acute otitis media) with a perforated eardrum. In such a situation, which usually involves a child, the middle ear infection is likely to be associated with a respiratory tract infection – see the section ‘Earache’ in Chapter 1: ‘Respiratory Problems’ and the section ‘Acute otitis media’, later in this chapter. As the middle ear infection develops, so does the pain. It is often intense and remains so until the drum perforates, alleviating the pressure and pain and leading to a discharge.

Management of otitis externa

A good history is essential, including questions about any previous OE and recent foreign travel (association with swimming pools). Patients with OE should be referred to their local surgery, where they may be seen by a GP or a nurse. Thorough cleansing of the external ear canal is needed in severe cases of OE. This is performed under direct vision using microsuction or dry swabbing by an ear specialist.

Acute localised otitis externa

Acute localised OE is caused by a boil (furuncle) in the ear canal and can be intensely painful. It is usually treated with topical preparations. There may be associated cellulitis and if so systemic antibiotics should be started, and *flucloxacillin* would be the treatment of choice (in those not allergic to penicillins). Regular analgesics help and effective pain relief can be achieved using *paracetamol* or *ibuprofen*. These can be combined with *codeine* when the pain is more severe, although the evidence of benefit is not definitive. Applying heat by holding a hot flannel against the ear can help to relieve pain.

Diffuse otitis externa

Approximately 90% of diffuse OE cases are bacterial. *Pseudomonas* infections account for two-thirds, and *Staphylococcal* are the next most common. The remaining 10% of infections are fungal, and *Aspergillus* is the most common form. Topical treatments containing an antibiotic alone or in combination with a corticosteroid are effective.

Self-care advice

For people who are prone to recurrent OE, the following self-care advice is helpful:

- Avoid damage to the external ear canal; cotton buds or other objects should not be used to clean the ear canal.

- If earwax is a problem associated with OE and ear drops do not clear it, seek professional advice and have it removed safely to avoid damaging the ear canal.
- Keep the ears clean and dry by:
    - Using ear plugs and or a tight-fitting cap when swimming – people with an acute episode of otitis externa should abstain from water sports for at least 7–10 days.
    - Using a hair dryer (at the lowest heat setting) to dry the ear canal after hair washing, bathing or swimming.
    - Keeping shampoo, soap and water out of the ear when bathing and showering.
- Ensure skin conditions that are associated with the development of otitis externa are well controlled:
    - If the person is allergic or sensitive to ear plugs, hearing aids or earrings, they should avoid them or use alternatives (e.g. hypoallergenic hearing aids are available).
    - If the person has a chronic skin condition (e.g. eczema or psoriasis), they should ensure that this is managed well.
- Consider using acidifying ear drops or spray shortly before swimming, after swimming and at bedtime. These ear drops are available to purchase OTC.

Source: Adapted from Clinical Knowledge Summaries (CKS).

Acute otitis media

Acute otitis media is an infection of the middle ear compartment between the outer ear canal and the inner ear. Between the outer ear and the middle is the eardrum (tympanic membrane). The middle ear is normally an air-containing compartment that is sealed from the outside apart from a small tube (the Eustachian tube), which connects to the back of the throat. Within the middle ear are tiny bones that transmit the sound wave vibrations of the eardrum to the inner ear.

A viral cold, especially in children, can lead to blockage of the Eustachian tube and fluid formation within the middle ear. This causes symptoms of pressure and pain (otalgia). Sometimes, the fluid can then be secondarily infected by a bacterial infection. Usually, the best treatment is pain relief with *ibuprofen* or *paracetamol*, as antibiotics make little difference, even if there is a bacterial infection. Children under 2 years of age, or where there is discharge from the ear, should be referred to the GP practice, as they are more likely to benefit from antibiotics. If the pain persists for more than a few days, or if the child is unwell (e.g. high fever, very restless or listless, vomiting), then the child should be seen by a doctor. Management of this common condition is described in Chapter 1: Respiratory Problems: Earache.

Glue ear

Some children develop glue ear (also known as serous otitis media) if the fluid that accumulates in the middle ear does not drain out completely. In about 50% of cases, it follows acute otitis media related to a respiratory infection. The fluid becomes tenacious and sticky, and if affecting both ears, it can cause deafness. In younger children, this can interfere with language development. Initially, observation over 6–12 weeks may be appropriate for most children, as spontaneous resolution is common. If the condition persists, referral to an ear specialist may be warranted. Increasingly temporary hearing aids are used to avoid operation, as many cases will get better given more time.

In more severe or persistent cases, one method of dealing with this common problem is a minor operation in which the thick fluid is sucked out through the eardrum. After this, it is usual to insert a small grommet or 'T-tube' into the hole in the drum. The grommet has a small hole in the middle, which allows any further fluid forming to drain from the middle ear. The grommet normally falls out, on average after 10 months, and the small hole in the drum closes over. Sometimes, they are reinserted. Although they improve hearing in the short term, the long-term effectiveness of these procedures is debated, and there are concerns that they can cause eardrum problems later in life.

Earplugs and grommets

Some children are advised not to get water into the ear after the insertion of a grommet. One method is to use earplugs that can be purchased from the pharmacy. However, this is often unnecessary, and bathing and swimming can be undertaken without using plugs, although it is sensible to avoid diving as water may enter the middle ear under pressure, which will impair hearing and may predispose to infection.

EAR PROBLEMS IN PRACTICE

Case 1

Sue Moorhouse is a woman in her 20s. She and her parents have been regular customers for years, and you know she recently went to Kenya on holiday. It is Saturday afternoon and Sue tells you that her ear problem has returned and seems to be related to holidays and swimming. She has had antibiotics to treat it on four previous occasions during the last 3 years. She tells you she recognises the signs. Her face started to swell this morning. Her outer ear now feels swollen, and her jaw is painful when she moves it. She knows from experience that if she can take some antibiotics within 24 h, the ear infection will not be so bad. In the past, the doctor has had trouble inserting the otoscope to inspect the ear because the inside of her ear had been so swollen and painful. The problem causes a feeling of intense pressure inside the ear, and she then has a discharge from the ear, which seems to ease the pain. When you check your patient medication record, you find that you have dispensed four courses of clarithromycin for Sue in the last 3 years.

The pharmacist's view

It is typical that a problem like this happens on a Saturday afternoon when it is less easy to refer to the doctor. I could refer Sue to the out-of-hours service or to an A&E department. I can think about possible actions I could take. There is no way I would consider leaving her to see the doctor on Monday.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?

The doctor's view

Sue needs referral to the out-of-hours service or, failing that, to the local A&E department. It sounds like she has recurrent OE with cellulitis. She is likely to need high-dose antibiotic treatment. As this is her fifth episode in the last 3 years, she may need some follow-up, possibly with an ENT surgeon. Also, she should consider protecting her ears when swimming with ear plugs and a tight-fitting cap. If on resolution of this infection there were exudate and debris present in the outer ear canal, she could benefit from cleaning of the ear using microsuction. This can reduce the possibility of recurrence.

Note: The Cochrane reviews and National Institute for Health and Care Excellence (NICE) guidelines do not have a date as they are often updated. The most up-to-date version should be consulted.

Section	**CKS** (`cks.nice.org.uk`)	**NHS Health A–Z** (`www.nhs.uk`)	**NICE guideline** (`www.nice.org.uk`)	
Eye problems: the red eye	☑ Conjunctivitis – allergic ☑ Conjunctivitis – infective ☑ Blepharitis ☑ Red eye ☑ Dry eye syndrome	☑ Conjunctivitis ☑ Blepharitis ☑ Contact lenses ☑ Red eye ☑ Dry eyes		• Cochrane review: clinical answers (2014). In people with acute bacterial conjunctivitis, how do antibiotics compare with placebo at improving outcomes? • Guly, C.M. and Forrester, J.V. (2010). Investigation and management of uveitis. *BMJ* 341 : c4976 • Drug and Therapeutics Bulletin (2016). The management of dry eye. *BMJ* 353: i2333 • Cochrane Review: Over the counter (OTC) artificial tear drops for dry eye syndrome. • Cochrane Review: Omega-3 and omega-6 polyunsaturated fatty acids for dry eye disease.
Common ear problems	☑ Earwax build-up ☑ Otitis externa	☑ Earwax ☑ Otitis externa	NG 98. Hearing loss in adults: assessment and management NICE guideline, 2018	• Cochrane Review: Ear drops for the removal of ear wax.

CHAPTER 10

Childhood Conditions

Childhood problems (affecting infants and children up to 16 years of age) understandably create significant parental anxiety. This heightened anxiety should be recognised and considered when parents seek help. Whether the pharmacist is confident about childhood problems or not, the most important method of dealing with this is to listen well, and with compassion, not only to the presenting complaints but also to the specific concerns of the parent. Sometimes, people will be open with their concerns; sometimes, it will be necessary to ask them about their concerns more than once. Just sharing a concern can diminish the perceived problem and make the rest of the consultation with the pharmacist more effective.

COMMON CHILDHOOD RASHES – INFECTIONS

Most childhood rashes are associated with self-limiting viral infections. Some of these rashes fit well-described clinical pictures (e.g. measles) and are described in the following text. However, others are more difficult to label. They may appear as short-lived, fine, flat (macular) or slightly raised (papular) red spots, often on the trunk. The spots blanch with pressure (erythematous). There are usually associated cold symptoms, cough and raised temperature. These relatively minor illnesses are common in the first few years of life and most settle without treatment. Any rash in early childhood, particularly during the first year, can be alarming and frightening for parents. Advice, reassurance and referral are needed as appropriate.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

What you need to know

When did it start?
Where did it start?
Where did it spread?
Any other symptoms?
Contact with children with rash
Past history of rash
Infections and rashes
  Chickenpox
  Measles
  Roseola infantum
  Fifth disease
  Rubella
  Meningitis
  Rashes that do not blanch
  Fever
  Itching
  Impetigo

Chickenpox (also known as varicella)

Chickenpox is most common in children under 10 years of age. It can occur in adults, but this is unusual as most people develop immunity in childhood. The incubation time (i.e. time between contact and development of the rash) is usually about 2 weeks (11–21 days). Sometimes, the rash is preceded by a day or so of feeling unwell with a raised temperature and headache. The rash is characteristic (see Figure 10.1), but it may be difficult to diagnose when only very few spots are present. If there is doubt, a history of recent exposure to chickenpox, or cases occurring in close contacts, may help confirm the diagnosis.

Typically, chickenpox starts with small red lumps that rapidly develop into minute blisters (vesicles). The vesicles then burst, forming crusted spots over the next few days. The spots mainly occur on the trunk and face, but may also involve the mucous membranes of the mouth. The rash is usually itchy and irritating, and the spots appear in crops. The whole infection is usually over within 1 week, but it may be longer and more severe in adults. Sometimes, the spots can become infected after scratching, so it can be helpful to advise cutting the child's fingernails short to reduce the chance of this possibility.

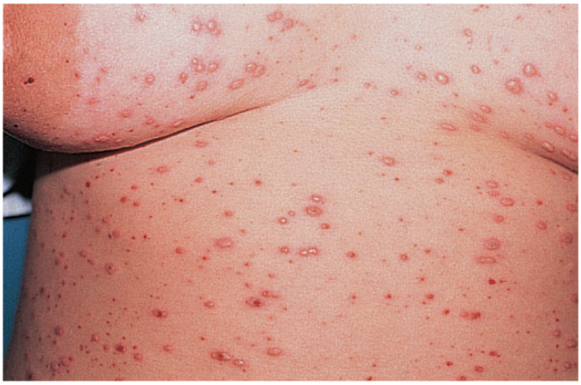

FIGURE 10.1 Typical appearance of chickenpox.

Children with chickenpox should be kept away from school or nursery until no more crops appear and all the spots have crusted over (which takes about 5 days after the onset of the rash) as at this point they are no longer contagious.

An important piece of advice for a parent or carer of a child with chickenpox (or the person with it) is to avoid the child having contact with people who may have a weakened immune system (immunocompromised), e.g. those receiving cancer treatment or high doses of oral steroids, pregnant women and babies aged 4 weeks or less. They may be more susceptible to infection, and chickenpox can be harmful to these individuals. If inadvertent contact occurs, then the susceptible individual should seek medical advice. Some airlines will not allow a person with chickenpox to travel. An important point to note, and an issue that may not be well known to members of the public, is that *ibuprofen* (and other non-steroidal anti-inflammatory drugs [NSAIDs]) should be avoided in children and adults with chickenpox as this is associated with an increased risk of skin infection.

Measles

Measles is now a less common infection in the more developed countries, but still remains a significant cause of childhood mortality on a large scale in illnesses affecting infants and children up to 16 years of age in developing countries. It is highly contagious in those without immunity gained from previous infection or immunisation. Every child should receive two doses of the combined measles, mumps and rubella (MMR) vaccine by entry to primary school. It is first given between the age of 12 and 15 months and repeated before starting school (i.e. before 5 years of age). At school-leaving age or at entry into further education, MMR immunisation should be offered to individuals who have not received the two doses during childhood. The ideal coverage by immunisation in the population is over 95%.

The uptake of MMR vaccine in England was about 85% in 2006 and may have been low due to unfounded fears of harm from the combined vaccine. Since then, coverage of the first dose of the MMR vaccine has slowly increased. It was 92.7% in 2016–2017, but has dipped slightly subsequently.

Before the introduction of measles vaccine in 1968, annual notifications in England and Wales varied between 160,000 and 800,000, with peaks every 2 years, and around 100 deaths from acute measles occurred each year. In 2018 and 2019, 989 and 808 cases of measles were confirmed in England and Wales, respectively. Many of those cases occurred in unvaccinated adolescents and young adults and were severe, often requiring hospitalisation (see Table 10.1 for the nature and risk of complications from measles). Deaths are now very rare; between 2006 and 2017, there were only four deaths.

Measles has an incubation period of about 10 days. The measles rash is preceded by 3–4 days of illness with symptoms of cold, cough, conjunctivitis and fever. After the first 2 days of this prodromal phase, small white spots (Koplik's spots), like grains of salt, can be seen on the inner cheek and gums.

The measles rash then follows. See Figure 10.2 for an example of the typical appearance of the measles rash. It starts behind the ears, spreading to the face and trunk. The spots are small, red patches (macular) that will blanch if pressed. Sometimes, there are so many spots that they merge to form large red areas. If measles is suspected, the patient must be referred for assessment. Detecting the infection and controlling spread is very important.

TABLE 10.1 Nature and risk of complications from measles

Death occurs in around 1 in 5000 cases
Hospitalisation for complications may be required in as many as 1 in 10 cases
Respiratory complications are usually due to bacterial superinfection, and include:
  Otitis media (7–9% of children)
  Pneumonia (1–6% of children)
Central nervous system complications include:
  Convulsions (about 1 in 200 children)
  Encephalitis (about 1 in 1000)

Subacute sclerosing panencephalitis is a rare but serious late complication affecting about 1 in 25,000 people with measles. It is more common in children – affects 1 in 8,000 children who contract measles under the age of 2 years. It occurs a median of 7 years after exposure to the virus, although it may occur as late as 3 decades afterwards, and is invariably fatal

Diarrhoea affects about 8% of children, but is not usually severe
Pregnancy: Measles may result in miscarriage, premature birth and low birthweight
Complication and death rates are much higher in those who have immunodeficiency or malnourishment

Source: Based on Information derived from *Clinical Knowledge Summaries and The Green Book*, Public Health England (2019).

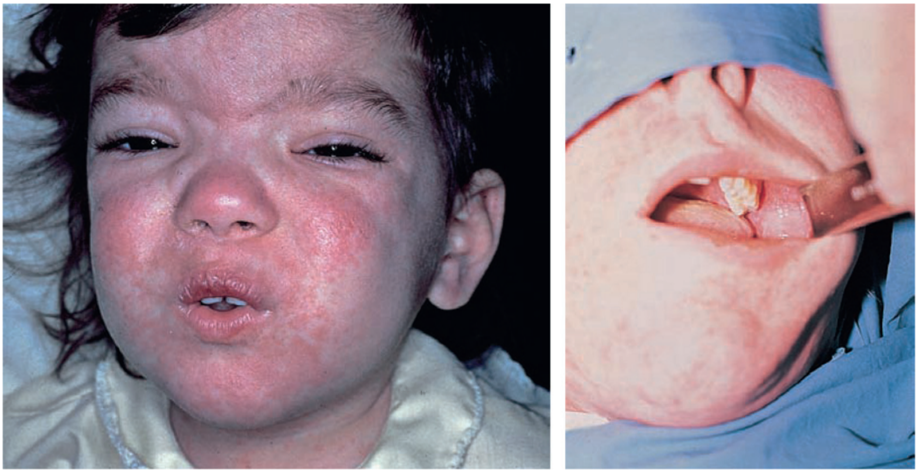

FIGURE 10.2 Typical appearance of measles.

In most cases, the rash fades after 3 days, at which time the fever also subsides. If, however, the fever persists, the cough becomes worse or there is difficulty in breathing or there is earache, then further medical attention should be sought as complications may be developing. Someone with measles is infectious for about 5 days after the rash appears.

Roseola infantum (sixth disease)

Roseola infantum is a common, relatively mild viral infection mostly occurring in children under 2 (it is seen between 3 months and 4 years of age). It can be confused with a mild attack of measles. There is a prodromal period of 3–4 days of fever followed by a rash similar to measles, but it is mainly confined to the chest and abdomen. Once the rash appears, there is usually an improvement in symptoms, in contrast to measles, and it lasts only about 24 h.

Fifth disease (erythema infectiosum)

Fifth disease is a mild, self-limiting viral infection (caused by parvovirus B19) that usually affects children. It does not often cause systemic upset, but may cause fever, headache and, rarely, painful joints. The rash characteristically starts on the face. It particularly affects the cheeks and gives the appearance that the child has been out in a cold wind. Fifth disease is sometimes called 'slapped cheek' disease because of the appearance of reddened cheeks. See Figure 10.3 for an example of the typical appearance. The rash then sometimes appears on the limbs and trunk as small red spots that blanch with pressure. The infection is usually short lived.

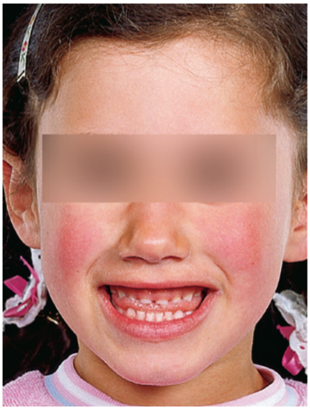

FIGURE 10.3 Typical appearance of fifth ('slapped cheek') disease.

Fifth disease can have adverse effects in those who have a weakened immune system (immunocompromised) and in pregnant women. If the infection occurs in the first 20 weeks of gestation, there is an increased chance of miscarriage and a small chance that the developing baby will become anaemic.

Rubella (German measles)

Rubella is a viral infection that is generally very mild, with its main significance being the problems caused to the foetus if the mother develops the infection in early pregnancy. The incubation time for rubella is 12–23 days. The rash usually starts on the face and spreads to the trunk and limbs. The spots are very fine and red. They blanch with pressure. They do not become confluent as in measles. The appearance of the rash is followed by a mild cough and runny nose. There is often enlargement of glands around the neck and head. In women, rubella may be associated with painful joints (this is rare in children and men). The rubella rash lasts for 3–5 days.

Meningitis

Meningitis is a very serious infection that can be caused by bacterial, viral or fungal infections. The bacterial causes, which are much more serious than viral causes, include meningococcal, *Haemophilus* and pneumococcal infections. In the United Kingdom (UK), vaccines are now routinely given for *meningococcus C*, *meningococcus B* (*MenB*), *Haemophilus influenzae type B* and *pneumococcus*. Meningococcus can cause a septicaemia (infection spreading throughout the body in the blood) in addition to meningitis alone, causing a typical rash. Meningococcal septicaemia usually presents with flu-like symptoms that may rapidly worsen (see Table 10.2). There may be an associated rash that appears as tiny purplish red blotches or bruises, which is caused by blood leaking out of capillaries. (Very small lesions are

TABLE 10.2 Other symptoms of meningitis

Meningitis can have a number of symptoms, other than rash, including:

- A high temperature (fever) over 37.5°C (99.5°F)
- Feeling and being sick
- Irritability and a lack of energy
- A headache
- Aching muscles and joints
- Breathing quickly
- Cold hands and feet
- Pale, mottled skin
- A stiff neck
- Confusion
- A dislike of bright lights
- Drowsiness
- Fits (seizures)

Babies may also:

- Refuse feeds
- Be agitated and not want to be picked up
- Have a bulging soft spot on their head (fontanelle)
- Be floppy or unresponsive
- Have an unusual high-pitched cry
- Have a stiff body

These symptoms can develop in any order and some may not appear.

Source: Derived from National Health Service (NHS) Health A–Z. guidance.

called petechiae, whereas the larger ones are called purpura and ecchymoses.) These do not blanch with pressure. The spots start as a few tiny pinpricks and progress to widespread larger ones that coalesce together. The tumbler test or glass test can be used to help assess whether or not the rash is serious. The side of a glass tumbler should be pressed firmly against the skin. If the spots are the small petechiae of septicaemia, they will not fade when the tumbler is pressed against the skin. Any suspicion of this condition in an ill child requires emergency medical help via 999 for an ambulance, or advice to go to the nearest accident and emergency (A&E) department immediately. See Table 10.2, which advises on other features to watch out for. If a child appears seriously ill, they should be referred urgently even if a rash is not present.

Rashes that do not blanch

As a general rule, all rashes that do not blanch when pressed (use the glass test as described previously) ought to be referred to a doctor. These rashes occur when blood leaks out of capillaries, which may be caused by infection or by a blood disorder. It could be the first sign of leukaemia, but can arise from less serious conditions. Blanching is not a concept that parents are familiar with. It is important to explain what is meant by blanching and how parents can check for it.

When to refer
Suspected meningitis (see Table 10.2)
Flu-like symptoms
Vomiting
Headache
Neck stiffness
Rash
Small widespread spots or bruises that do not blanch when pressed
Rashes that do not blanch when pressed

MANAGEMENT

Fever

Moderate fever (a raised temperature above 38°C, while normal is around 36.4°C) is very common and usually not harmful; some experts believe that moderate fever could even have beneficial effects in some illnesses. Most cases can be managed at home. A useful checklist to identify serious illness in younger children is provided in Table 10.3. Babies younger than 3 months with a temperature of 38°C or higher, as well as those between 3 and 6 months with a temperature of 39°C or higher, are at a higher risk for having serious illness and require medical assessment.

The question of whether and when an antipyretic medicine should be given remains a matter of debate. The National Institute for Health and Care Excellence (NICE) guideline on feverish illness in children was published in 2019; it advises against routine use of an antipyretic to solely reduce temperature if the child is otherwise well. The guideline recommends that *paracetamol* or *ibuprofen* be considered when a feverish child is in distress, but not for the sole purpose of reducing body temperature. Many parents will have been used to giving children an antipyretic for fever and the pharmacist has an important role in offering advice. NICE advises that when using *paracetamol* or *ibuprofen* in children with fever:

1. Continue only as long as the child appears distressed.
2. Consider changing to the other agent if the child's distress is not alleviated.
3. Do not give both agents simultaneously.
4. Only consider alternating *paracetamol* and *ibuprofen* if the distress persists or recurs before the next dose is due.

TABLE 10.3 Advice for parents on serious illness in a baby or toddler from NHS Health A–Z

Is your baby or toddler seriously ill?

It can be difficult to tell when a baby or toddler is seriously ill, but the main thing is to trust your instincts

You know better than anyone else what your child is usually like, so you will know when something is seriously wrong

Signs of serious illness in a baby or toddler

Here is a checklist of warning signs that might be serious:

Temperature

- A high temperature, but cold feet and hands
- A high temperature that does not come down with *paracetamol* or *ibuprofen*
- Your child feels hot or cold to touch, or is shivering
- Your child is quiet and listless, even when their temperature is not high
- A high temperature in a baby less than 8 weeks old

Breathing

- Rapid breathing or panting
- A throaty noise while breathing
- Your child is finding it hard to get their breath and is sucking their stomach in under their ribs

Other signs

- Blue, pale, blotchy or ashen (grey) skin
- Your child is hard to wake up, or appears disorientated or confused
- They are crying constantly and you cannot console or distract them, or the cry does not sound like their normal cry
- Green vomit
- Your child has a fit (convulsion or seizure) for the first time
- Your child is under 8 weeks old and does not want to feed
- Nappies that are drier than usual – this is a sign of dehydration

If your child has any of the above-mentioned signs, get medical help as soon as possible:

- During the day from Monday to Friday – it is best to call your general practitioner (GP)
- Evenings and weekends – call NHS 111 (in England), or call the out-of-hours number for your GP
- If your baby is under 6 months old, it is hard for a doctor or nurse to assess them over the phone – you can go to an urgent care (walk-in) centre or, if you are very worried, take them to an A&E department

When to call an ambulance

Call 999 for an ambulance if your child:

- Stops breathing
- Will not wake up
- Has a spotty, purple or red rash anywhere on their body that does not fade when you press a glass against it – this could be a sign of blood poisoning (sepsis)
- Is under 8 weeks old and you are very worried about them
- Has a febrile seizure (fit) for the first time, even if they seem to recover
- Has a severe allergic reaction (anaphylaxis)
- If you think someone may have seriously injured your baby

Again, trust your instincts. You know what is different or worrying behaviour in your child.

Sponging with lukewarm water used to be recommended as a method of reducing fever; however, it can cause crying, goosebumps and shivering, and is now viewed as potentially causing discomfort to the child. For these reasons, NICE no longer recommends tepid sponging. It also advises to dress the child appropriately for their surroundings, with the aim of preventing either overheating or shivering, rather than taking most clothes off.

Many babies develop a raised temperature after immunisation. Some preparations containing *paracetamol* or *ibuprofen* can be used over-the-counter (OTC) to reduce post-immunisation fever. It is advised not to routinely give them in advance to *prevent* fever around the time of vaccination unless the meningitis B (*MenB*) vaccine (*Bexsero*®) is being given to children under the age of 1 year, when prophylactic liquid *paracetamol* is recommended at the time of vaccination or closely following it. However, if pain or fever is problematic after the child has been vaccinated, then *paracetamol* or *ibuprofen* may be used. Product licences vary, so check the labels.

Itching

The itching caused by childhood rashes, such as chickenpox, can be intense, and the pharmacist is in a good position to offer an antipruritic cream, ointment or lotion. *Calamine lotion* is used traditionally and it is thought evaporation results in cooling and soothing. Some experts are not so keen on this use as the powdery residue it leaves may further dry and irritate itchy dry skin. *Crotamiton cream* or *lotion* may also help to soothe itchy skin. *Colloidal oatmeal* made into a paste or added to bathwater is also sometimes used. If itching is very severe, oral *chlorphenamine* may be effective in providing relief. The syrup formulation (2 mg in 5 ml) can be given to children of 1 year and over. It is licensed for use OTC in chickenpox rash. Such treatment would be likely to make the child drowsy, but this may prove useful at night-time. A medical device is available comprising an osmotic gel containing *glycerol*, which has the effect of drawing water from the dermis to the skin surface, creating a cooling effect. There are no published studies of efficacy.

IMPETIGO

Impetigo is a very common superficial bacterial infection of the skin in children, usually affecting the face. It is usually caused by *Staphylococcus aureus*. It is contagious and can also spread to other parts of the skin (e.g. from the face to a scraped knee). Although it is mainly seen in young children, it can occur at any age. Impetigo can develop as a primary infection in otherwise healthy skin, or the bacteria can enter the skin through breaks caused by minor trauma, such as insect bites or scratches, or underlying skin conditions, such as eczema, scabies or chickenpox.

There are the two main appearances. The commonest is non-bullous impetigo that accounts for around 70% of cases. Lesions begin as pustules that release exudate forming a characteristic golden/brown crust. See Figure 10.4 for an example of the characteristic appearance of impetigo. Once the crusts have dried, they separate leaving redness, which then fades over 2–3 weeks. The lesions are often multiple with 'satellite' areas indicating spread. The other type is bullous or blistering impetigo with fluid-filled lesions, which are usually more than 5 mm in diameter. The blisters rupture leaving a thin flat yellow/brown crust. Healing usually occurs within 2–3 weeks without scarring.

Advise the person, and their carers if appropriate, about good hygiene measures to aid healing and reduce the spread of impetigo to other areas of the body, as well as to other people. Recommend that the affected area is washed with soap and water and the crust is softened. Antibacterial preparations may help. Children and carers should wash their hands regularly, particularly after touching a patch of impetigo. Advise to avoid scratching the affected areas. Also avoid sharing towels, face cloths and other personal care products, and thoroughly clean potentially contaminated toys and play equipment. Sheets and pillowcases should also be washed frequently at a hot setting (>60°C).

A common question relates to school attendance. The British Association of Dermatologists recommends that children with impetigo should be kept off school or nursery until the affected areas have healed or 48 h after starting treatment. It

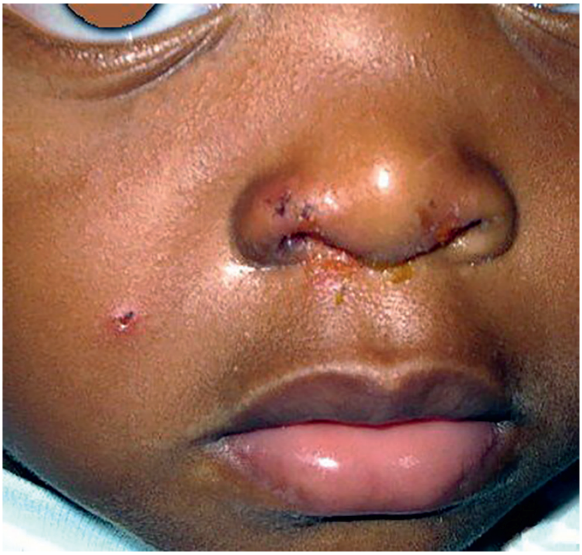

FIGURE 10.4 Typical appearance of impetigo. *Source:* Grook Da Oger/Wikimedia/CC BY-SA 3.0.

provides a useful patient information leaflet obtainable from `www.bad.org.uk/patient-information-leaflets`.

NICE recommend that *hydrogen peroxide 1% cream* (applied two or three times daily for 5–7 days) can be used in children who are not systemically unwell and have non-bullous impetigo. This can be supplied as a pharmacy (P) medicine but is expensive to buy, although it is free for children if provided 'on prescription'. Alternatively, a short course (5–7 days) of a topical antibiotic can be used. This is usually *fusidic acid 2%*, but *mupirocin 2%* can be used where *fusidic acid* resistance is suspected. These antibiotic creams are prescription-only medicines (POMs). Many pharmacists in the UK can now provide these topical treatments under patient group directions (PGDs) which avoids unnecessary GP consultations and enables free supply for children, if *hydrogen peroxide 1% cream* is recommended. If these treatments do not work, or the impetigo is bullous, or affecting several sites, oral antibiotics, such as *flucloxacillin* or *clarithromycin*, may be prescribed by the GP. Some pharmacists can also provide these oral antibiotics (which are also POMs) under PGDs.

Children should be referred to the GP surgery, if:

- They have bullous impetigo, particularly in babies (aged 1 year and under).
- They have impetigo that recurs frequently.
- They are systemically unwell (there may be a risk of sepsis).
- They are at high risk of complications – e.g. diabetes or immunosuppression.
- The tissue around the area of infection is swollen (suggesting cellulitis).
- Deep soft tissue infection is suspected.
- The condition is not improving with treatment.

If the pharmacist suspects a significant local outbreak (e.g. in a nursing home or school), this should be discussed with the local surgery as public health authorities should be informed.

INFANTILE COLIC

Infantile (or baby) colic is defined as repeated episodes of excessive and inconsolable crying in an infant who otherwise appears to be healthy and thriving. Although the word colic implies cramping in the bowel, the cause of colic is unknown. It may affect between 1 in 20 and 1 in 5 babies. Although infantile colic is not harmful, it is stressful for both the baby and the parents. It generally begins in the first few weeks after the baby is born and usually resolves by the time the baby is 3–4 months old.

What you need to know

Age
Symptoms
Feeding
Parental smoking
Any advice already sought?
Is there parental stress?
Signs of serious illness

Age

Infantile colic generally starts in the early weeks and may last up to the age of 3–4 months or by 6 months at the latest.

Symptoms

Parents usually describe crying that occurs in the late afternoon and evening, where the baby cannot be comforted, becomes red and flushed in the face with crying and may draw the knees up. Clenching of the fists and arching of the back is common. Passing wind and difficulty in passing stools may also occur.

Infantile colic rarely causes harm, and the main problem is distress to the mother and father. Breastfeeding may sometimes be stopped in a search for a solution (which is not a good thing). It is important to be aware that colic is not the only cause of crying and discomfort, but things such as nappy rash or itchy eczema may be implicated. If a baby becomes inconsolable and cannot be comforted, the parent should be advised to consult a GP or out-of-hours service. Rarely, serious problems, such as intussusception (where the bowel gets folded in), volvulus (twisting of the bowel) or a strangulated hernia, can occur and cause illness, with vomiting and incessant and loud crying. Blood in the nappy is sometimes seen with intussusception or volvulus.

See Table 10.3 for other signs of serious illness in a baby or toddler.

Feeding

Establish whether the baby is bottle-fed or breastfed (or a combination) and the type of formula milk being used. Infantile colic is equally common in babies who are either breastfed or bottle-fed.

Parental smoking

Colic is twice as common in babies of mothers who smoke; therefore, it is worth asking about smoking and offering advice about stopping where relevant.

Any advice already sought?

It is useful to ask whether advice has been sought already either from health professionals or from lay sources. The pharmacist can assess the relevance and appropriateness of advice already received. Health visitors have considerable experience of managing colic.

MANAGEMENT

There is no good evidence to support any of the commonly tried approaches to management. The most useful intervention is reassurance, advice and support. It is important to reassure parents that colic is not their fault, that the colic is not causing the baby harm and that the baby will ‘grow out of it’. The main problem is the upset it causes them. Simple measures, such as holding the baby upright during feeding to enable ‘wind’ to pass more easily, and adequate burping after the feed may help.

Holding the baby through the crying episode may be helpful and make parents feel better. However, if there are times when the crying feels intolerable, it is best to put the baby down somewhere safe (such as in their cot) and take a few minutes’ ‘time out’. Other strategies that may help to soothe a crying infant include things like pushing the pram or rocking the crib. Some parents find taking the baby for a car ride helps. It has also been suggested that ‘white noise’ (e.g. from a vacuum cleaner, hairdryer or running water) is soothing, or bathing the baby in a warm bath may help.

An element that may be overlooked is encouraging parents to look after their own well-being by asking family and friends for support and enabling a break. Trying to rest when the baby is asleep should be encouraged and also meeting other parents with similar experiences.

Health visitors frequently see colic and can provide advice and parental support. A support group called Cry-sis may also help (see: `www.cry-sis.org.uk`).

Simeticone

Simeticone has been commonly used to treat infantile colic and is included in several proprietary preparations. However, only three small trials were found in systematic reviews, and the evidence of benefit is uncertain. A trial of *simeticone* drops for 1 week could be suggested if other strategies are unsuccessful and the parents would like to try treatment. GPs in England may be unwilling to prescribe this as infantile colic treatments are on the NHS list of OTC products that it is expected patients will buy.

Feeding

There is little evidence that dietary change, or additives to the baby’s diet, helps with symptoms of colic. Breastfeeding mothers should be strongly encouraged to continue to breastfeed. There is no evidence that changes to the mother's diet make any difference either. In bottle-fed babies, various changes to the formulation are often tried, but this may confuse things and recommendations on such changes are best guided by a health visitor.

Complementary therapies and probiotics

Herbal tea, given to the baby, has been used in colic, but there is no definitive evidence about either efficacy or safety of herbal teas or other herbal products in infants. Issues around standardisation of ingredients and questions about the possible presence of other ingredients mean these preparations are best avoided. A systematic review of the use of probiotics in colic concluded that these are not effective in preventing colic; they may reduce crying time and appear to be safe, but more studies are needed.

Behavioural approaches

In the past, it was thought that overstimulation of the baby might be a cause of colic. Therefore, there have been studies to test avoiding carrying or holding the baby unnecessarily and not intervening too rapidly when the baby cries. These studies did not show a significant effect.

Baby massage

Although baby massage seems to have become more popular as a method of managing colic, the evidence of benefit is uncertain.

TEETHING

Teething is the process in which deciduous teeth (sometimes known as milk teeth or baby teeth) emerge through the gums. Attributing symptoms to teething should only be done when other causes have been ruled out. Most infants start teething around 6 months of age, but some can start as early as 3 months. Teething continues until the age of 2–3 years. The association of discomfort and physical change with teething is a matter of some debate.

Current thinking is that teething may account for symptoms that start around 3–5 days before each tooth eruption and include pain, increased chewing, drooling, gum rubbing, sucking, irritability, wakefulness, ear rubbing, facial rash, decreased appetite, disturbed sleep and (possibly) mild temperature elevation. It is not itself a cause of infection. An important point about associating systemic problems with teething is that a more serious underlying cause must not be overlooked.

MANAGEMENT

Parents can relieve local discomfort using application of cold (e.g. a teething ring cooled in the fridge or a cold, wet flannel) and the use of analgesics (*paracetamol* suspension) or topical teething gels (noting that topical salicylate gels are contraindicated in children under 16 years of age). For children who have been weaned, the supervised use of chilled fruit or vegetables (such as bananas or cucumber) can be considered. A crust of bread or a breadstick can also help.

Herbal products are perhaps best avoided. There is a homoeopathic teething product available as granules that is relatively harmless.

Parents should be encouraged to clean their baby's teeth from their first appearance using a baby toothbrush. If dummies are used, it is important not to dip them or teething rings into honey, fruit juices or syrups, as this will damage developing teeth. In any case, honey should not be given to children under 1 year of age due to risk of botulinum. Further advice on prevention of teething problems can be obtained from the health visitor.

NAPPY RASH (NAPKIN DERMATITIS)

Nappy rash is an irritant contact dermatitis confined to the nappy area. Nappies cause the skin to become waterlogged and fragile and hold irritant substances in place, resulting in irritation and inflammation. Subsequent colonisation with *Candida albicans* is common. Most babies will have nappy rash at some stage during their infancy. The best way to deal with nappy rash is to try to prevent it from happening in the first place. Contributory factors include prolonged contact of urine and faeces with the skin and the irritant effect of soaps/detergents/bubble baths. Advice from the pharmacist is important in both treating and preventing recurrence of the problem. Guidance to GPs in England on OTC treatments is that prescriptions for treatment for nappy rash will not routinely be offered in primary care as the condition is appropriate for self-care.

What you need to know

Nature and location of rash
    Severity
    Broken skin
    Signs of infection
Duration
Previous history

Other symptoms
Precipitating factors
    Skin care and hygiene
Medication

Significance of questions and answers

Nature and location of rash

Nappy rash, sometimes called napkin dermatitis, appears as an erythematous (red) rash on the buttock area. In simple irritant nappy rash, other areas of the body are not involved, in contrast to nappy rash with infantile seborrhoeic dermatitis, where the scalp may also be affected (cradle cap). In infantile eczema, other body areas, such as the wrists, elbows and knees, are often involved. The initial treatment of nappy rash is similar for these conditions.

Severity, broken skin and signs of infection

In general, if the skin is unbroken and there are no signs of secondary bacterial infection, treatment may be considered. The presence of bacterial infection could be signified by exudate with weeping, blisters or yellow crusting. Secondary candida infection (thrush) is also common in nappy rash, and the presence of satellite papules (small, red lesions near the perimeter of the affected area) and skin in the folds, which is nearly always affected in candida, would indicate such an infection. See Figure 10.5 for an example of nappy rash complicated by candida infection.

Usually, there are no symptoms (scratching or systemic upset), but if the nappy rash is severe or painful, the child may be distressed or uncomfortable. Referral to the health visitor or GP surgery would be advisable if the nappy rash is very severe or if bacterial infection is suspected, since topical or systemic antibiotics might be needed. Secondary candida infection could be treated by the pharmacist using one of the imidazole topical antifungal preparations that are available.

Duration

If the condition has been present for longer than 1 week, the pharmacist might decide that referral to the doctor would be the best option, depending on the nature and severity of the rash.

Previous history

You should establish whether the problem has occurred before and, if so, what action was taken, e.g. treatment with OTC products.

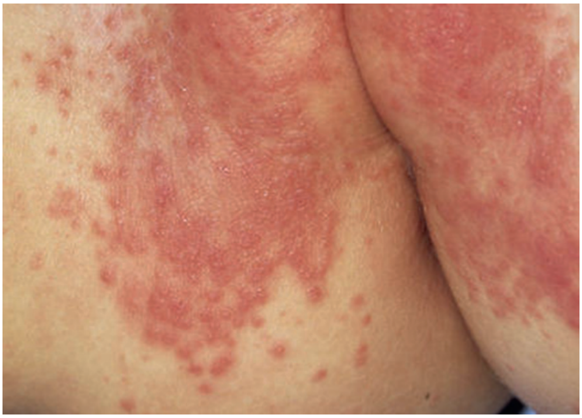

FIGURE 10.5 Example of nappy rash complicated by candida infection. Note satellite lesions. *Source: General Practice at a Glance* by Paul Booton, Carol Cooper, Graham Easton, Margaret Harper. Reproduced with permission of John Wiley & Sons.

Other symptoms

Nappy rash sometimes occurs during or after a bout of diarrhoea, when the perianal skin becomes reddened and sore by frequent exposure. You should therefore enquire about current or recent incidence of diarrhoea. Diarrhoea may often occur as a side effect of antibiotic therapy and this may be the cause. Sometimes, candida infection (thrush) in the nappy area may be associated with oral thrush that causes a sore mouth or throat (see the section 'Oral thrush', later in this chapter). If this is suspected, referral to the doctor is advisable.

Precipitating factors – skin care and hygiene

At one time, nappy rash was thought to be a simple irritant dermatitis due to ammonia, produced as a breakdown product of urine in soiled nappies. However, other factors are now known to play a part. These include irritant substances in urine and faeces, sensitivity reactions to soaps and detergents or antiseptics left in reusable nappies, and sensitivity reactions to ingredients in some topical preparations, e.g. in baby wipes. Soaps and detergents will also remove natural body fats and make the skin more susceptible to irritants and infection.

The major factor thought to influence the incidence of nappy rash is the constant wetting and rewetting of the skin when left in contact with soiled nappies. Maceration of the skin ensues, leading to enhanced penetration of irritant substances through the skin and the breakdown of the skin. Wearing occlusive plastic pants exacerbates this effect. Frequent changes of nappy together with good nappy-changing routine and hygiene are essential (see the section 'Practical points', later in this chapter).

Medication

The identity and effectiveness of any preparations used for the current or any previous episode, either prescribed or purchased OTC, should be ascertained by the pharmacist. The possibility of a sensitivity reaction (allergy) to an ingredient in a topical product already tried should be considered by the pharmacist, especially if the rash has got worse. A recent course of antibiotics may cause loose motions or diarrhoea, which may predispose to a nappy rash; antibiotics may also cause candida overgrowth, with associated nappy rash.

When to refer

- Broken skin and severe rash
- Unwell baby
- Signs of infection
- Other body areas affected
- Persistence of rash

Treatment timescale

A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the health visitor or GP.

MANAGEMENT

Treatment and the prevention of further episodes can be achieved by a combination of OTC treatment and advice on care of the skin in the nappy area.

Emollient preparations

Emollients are moisturising treatments applied directly to the skin and cover it with a protective film. They are the mainstay of treatment and prevention and help to add to the body's natural barrier to irritant substances. Ointments are generally more effective than creams and lotions as they provide a better moisture barrier. The inclusion of a water repellent, such as *dimeticone*, is useful in theory, but there is no convincing evidence that such products are more effective. The choice of individual preparation may sometimes depend on customer preference, and many preparations are equally effective. Most pharmacists will have a particular favourite that they usually recommend. Some of the ingredients included in preparations for the treatment and prevention of nappy rash and their uses are described in the following text.

Zinc (usually with castor oil)

Zinc acts as a soothing agent.

White soft paraffin ointment

White soft paraffin ointment has been used as a mainstay of both prevention and treatment for many years. It provides an inert barrier on the skin and prevents irritating substances causing damage.

Lanolin

Lanolin hydrates the skin. It can sometimes cause sensitivity reactions (allergy), although the use of hypoallergenic purified *lanolin* will reduce this possibility.

Castor oil/cod liver oil

Castor oil and *cod liver oil* provide a water-resistant layer on the skin.

Antifungals

Secondary infection with candida is common in nappy rash and the imidazole antifungals are effective. *Miconazole*, *econazole* or *clotrimazole* applied twice daily can be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. *Terbinafine* is not licensed for nappy rash and should not be used for this purpose. If an antifungal cream is advised, treatment should be continued for 4–5 days after the symptoms have apparently cleared. An emollient cream or ointment can still be applied over the antifungal product.

PRACTICAL POINTS

1. Nappies should be changed as frequently as necessary. Babies up to 3 months old may pass urine as many as 12 times a day.
2. Nappies should be left off wherever possible and, as long as possible, between changes so that air is able to circulate around the skin, helping the affected skin to become and remain dry. Laying the baby on a terry nappy or towel with a waterproof sheet underneath will prevent the soiling of furniture or bedding.
3. At each nappy change, the skin should be cleansed thoroughly by washing with warm water or using proprietary lotion or wipes. If using wipes, fragrance-free and alcohol-free baby wipes are preferable. The skin should then be carefully, thoroughly and gently dried. The use of talcum powder can be helpful, but the clumping of powder can sometimes cause further irritation. If used, talcum powder should always be applied to dry skin and should be dusted lightly over the nappy area.

4. The most important thing is the regular use of an emollient cream or ointment before putting on a clean nappy, applied to clean dry skin, which helps to protect the skin against irritant substances. The routine use of a barrier preparation is widely recommended by experts.
5. Avoid soaps, bubble bath or lotions; these can remove fats (lipids) from the skin, making it more vulnerable to irritants and microorganisms.

Nappy rash in practice

Case 1

Jane Simmonds, a young mother, asks you to recommend a good cream for her baby daughter's nappy rash. The baby (Sarah) is 5 months old and Ms Simmonds tells you that the buttocks are covered in a red rash. The skin is not broken and there is no weeping or yellow matter present. On further questioning, you find that a rash is also affecting the upper back and neck, and there are signs of its appearance around the wrists. The rash seems to be itchy, as Sarah keeps trying to rub the affected areas. Ms Simmonds uses disposable nappies, which she changes frequently, and *zinc and castor oil* cream is applied at each nappy change, after cleansing the skin. The baby has no other symptoms and is not taking any medicines.

The pharmacist's view

Ms Simmonds' nappy-changing and skin-care routine seems to be adequate, but the baby has both nappy rash and the rash that has affected other areas of the body. It is possible that Sarah has infantile eczema, and referral to a GP or health visitor would be the best course of action.

The doctor's view

It is quite likely that Sarah does have eczema, which could be the cause of her nappy rash. It is also possible that an eczematous rash can be complicated by a secondary infection. Referral to the doctor or health visitor for further assessment, as suggested, would be wise. Such skin problems can be upsetting for the mother, who may feel her care has been inadequate, so it is important that Ms Simmonds should be given an opportunity to air her understanding and concerns about the problem and, in return, that the doctor offers an appropriate reassurance and explanation. The management would be to reinforce all the above practical points and possibly prescribe a weak topical corticosteroid, such as *1% hydrocortisone*, with or without an antifungal or antibacterial agent to use on the nappy area. Avoidance of soap and detergents at bath time is also important. The use of emollients and a short course of *1% hydrocortisone* will help with the other areas of eczema.

Case 2

Mrs Parveen Aktar is worried about her baby son's nappy rash, which, she tells you, seems to have appeared over the last few days. The skin is quite red and looks sore and she has been using a proprietary cream, but the rash seems to be even worse. The baby has never had nappy rash before and is 7 months old. Mrs Aktar is using reusable nappies and has recently changed the washing powder she uses, on a friend's recommendation, to get the nappies cleaner. The rash affects only the nappy area and the baby has no other symptoms.

The pharmacist's view

The history gives two clues to the possible cause of the problem. This baby has not had nappy rash before and this episode has coincided with a change in detergent, so it is possible that a direct irritant sensitivity or allergic reaction is occurring due to residues of detergent in the nappies after washing. The second factor is the cream that Mrs Aktar has been using to treat the problem, with no success. The ingredients of the product should be carefully considered by the pharmacist to see if any might be potential sensitisers.

Initial advice to Mrs Aktar might be to revert to her original detergent and to use a different treatment. Advice on nappy-changing routine could be given, and if the rash has not started to resolve within 1 week, or has become worse, referral to a health visitor or GP would be indicated.

The doctor's view

The advice given by the pharmacist should clear up the problem quickly. It would be quite reasonable to refer Mrs Aktar and her baby to a health visitor for further advice if the rash does not settle down.

HEAD LICE

Head lice are wingless insects that feed on blood from the human scalp. Head lice infection is common in young children. Effective treatments are available, but treatment failure may occur if products are not used correctly. It is therefore important for the pharmacist to explain how products should be used, since more patients are now being directed to pharmacies to obtain treatment. Physical treatments are now preferred to chemical options. Head lice treatments are now on the list of OTC products in the NHS in England that people are expected to purchase, and GPs will rarely prescribe. The pharmacist has a valuable health education role in explaining how to check children's hair for lice and in discouraging prophylactic use of insecticides. Parents are often embarrassed to seek advice, particularly if the child has head lice. Pharmacists can reassure parents that the condition is common to everyone and does not in any way indicate a lack of hygiene. The term infection is generally preferred to infestation when talking to patients because of the unpleasant image associated with infestation.

What you need to know

- Age
  - Child or adult
- Signs of infection
  - Checking for infection – live lice
  - Nits
  - Scalp itching
- Previous infection
- Medication
- Treatments used

Significance of questions and answers

Age

Head lice infection is most commonly found in children, particularly around 4–11 years old, with girls showing a higher incidence than boys. Older children and adults seem to be less prone to infection. Adult women occasionally become infected (see Figure 10.6 for an example of this), but head lice infection is rare in adult men possibly because, as men lose hair through male pattern baldness, the scalp offers less shelter to lice.

Signs of infection

Checking for infection

Seeing live lice is required to confirm diagnosis. Wet combing of the hair is a more reliable detection method than scalp inspection. Parents can easily check for infection by combing the child's hair over a piece of white- or light-coloured paper, using a fine-toothed comb (tooth spacing of <0.3 mm). The hair should be damp or wet to make the combing process easier and less painful. Also, dry hair can produce static that causes lice to be repelled from the comb, making detection less likely. After each stroke from the roots to the tips of the hair, the comb should be wiped on a white tissue or cloth. The hair should be combed one section at a time. The hair at the nape of the neck and behind the ears should be thoroughly

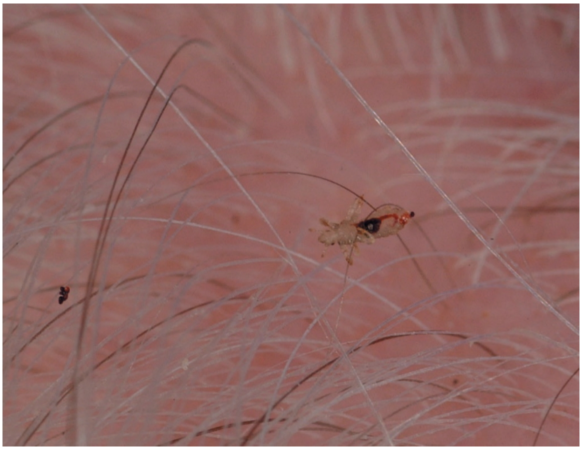

FIGURE 10.6 A woman who had acquired a head lice infection from her grandchild. *Source:* Weller et al. (2014). Reproduced with permission of John Wiley & Sons.

checked. These areas are preferred by lice because they are warm and relatively sheltered.

If live lice are present, some will be combed out of the hair and onto the paper, where they will be seen as small beige, black, greyish or brown-coloured specks that on close inspection move. Cast shells are discarded as the louse grows and appear yellowish in colour. Louse faeces may be seen as small blackish specks on pillows and collars.

After treatment of affected family members, parents should check whether the treatment has been successful by doing detection combing on day 2 or 3 after completing a course of treatment and again after a further interval of 7 days. More checks will be needed if there are further symptoms or when infection is known to have occurred in other children at school or playgroup.

Nits

The presence of empty eggshells – the cream- or white-coloured nits attached to the hair shafts – is not necessarily evidence of current infection unless live lice are also found. Parents sometimes think that treatment has failed because nits can still be seen in the hair. It is therefore important for the pharmacist to explain that the empty shells are firmly glued to the hair shaft and may not be removed by the lotion used in treatment. A fine-toothed comb can be used to remove the nits after treatment.

Itching

An itchy scalp is not adequate to confirm lice infection as there are other causes. Conversely, contrary to popular belief, itching is not experienced by everyone with a head lice infection. In fact, as few as one in five cases presents with itching, perhaps because detection now occurs at an earlier stage than used to be the case. When it occurs, itching of the scalp is an allergic response to the saliva of the lice, which is injected into the scalp in small amounts each time the lice feed. Sensitisation does not occur immediately and it may take weeks for itching to develop. It has been estimated that thousands of bites from the lice are required before the reaction develops. The absence of itching does not mean that infection has not occurred. In someone who has previously been infected and becomes reinfected, itching may quickly begin again.

Previous infection

You should establish whether the child has been infected before. In particular, it is important to know whether there has been a recent infection, as reinfection may have occurred from other family members if the whole family was not treated at the same time. Head-to-head contact, between family members and also among young children while playing, is responsible for the transmission of head lice from one host to the next. The pharmacist could ask whether the parent was aware of any contact with infected children; for example, if there is currently a problem with head lice at the child's school.

Medication

While it is possible that treatment failure may occur, this is unlikely if a recommended insecticide has been used correctly (see the following section – 'Management'). Careful questioning will be needed to determine whether treatment failure has occurred. The identity of any treatment used and its method of use should be elicited.

MANAGEMENT

Having established that infection is present, the pharmacist can go on to recommend an appropriate treatment. Only those individuals in whom a live head louse has been found should be treated, and all those affected in the same household should be treated on the same day. Many areas in the UK have local public health guidance for treatment of head lice, and this should be consulted and followed. Some parents will have a preference, e.g. not to use chemicals.

There are several options:

- Physical insecticides
- Wet combing ('Bug Busting')
- Chemical insecticides (for use in exceptional circumstances)
- Complementary therapies (not recommended)

There are now a range of physical products and special combs. These are generally now considered 'first-line' as they have few adverse effects, and lice do not develop resistance to them. They kill the lice by a variety of means, such as physically coating their surfaces and suffocating them (*dimeticone* does this) or dissolving the wax coating of the louse and causing death by dehydration. There is reasonably good evidence of efficacy from randomised clinical trials for most of these.

Dimeticone products (lotions and sprays) usually require application to dry hair and are then left on for 8 h (or overnight) and washed out with shampoo and water. This is usually repeated 7 days later. Each product has slightly different instructions for use, and hence these should be consulted. Several product packs contain a fine-toothed comb to enable lice detection to facilitate the process. Adverse effects are not common, but include itchy or flaky scalp and irritation if the product gets into the eyes. They can be used for people with eczema or asthma.

Another product, isopropyl *myristate/cyclomethicone solution*, is applied to dry hair and washed out after 10 min. Further application should be considered in 7 days if detection combing is positive (and is possibly advisable in any case).

Other products containing a variety of other compounds that kill lice by physical means are also available. The individual product instructions should be followed.

Wet combing (Bug Busting) method

Various types of wet combs are available to purchase, and some are available on NHS prescription (via FP10), although in England, GPs are now discouraged from prescribing them as self-care is encouraged. The plastic Bug Buster® comb has a lot of published evidence to support its use, but it is likely that other combs, including the metal ones, are similarly effective.

How should wet combing treatment be performed? (as advised by NHS Health A–Z)

Wet combing is suitable for both detection of head lice infestation and as a treatment.

There may be instructions on the pack, but usually:

- Wash hair with ordinary shampoo
- Apply lots of conditioner (any conditioner will do)
- Comb the whole head of hair, from the roots to the ends

It usually takes about 10 min to comb short hair, and 20–30 min for long, frizzy or curly hair.

- Do wet combing on days 1, 5, 9 and 13 to catch any newly hatched head lice.
- Check again that everyone's hair is free of lice on day 17.

Detailed instructions on how to perform wet combing are available on the patient information leaflet of the specific head lice treatment comb being used. Information on wet combing using the *Bug Buster® comb* is also available on the Community Hygiene Concern website (`www.chc.org`), including a YouTube video.

Chemical insecticides

With the advent of physical insecticides, which are more effective and do not cause resistance to develop, it is recommended that use of *malathion* is reserved for exceptional circumstances. Another insecticide *permethrin* is no longer recommended for head lice because resistance rates are high in the UK.

Malathion is applied to dry hair and scalp and left for a minimum contact time of 12 h (or overnight) with a second application a week later. Approximately 50–55 ml of lotion should be sufficient for one application for most people. The hair should be left to dry naturally without a hair drier because *malathion* is inactivated by heat. When an alcoholic lotion is used, the hair should be kept away from naked flames.

Alcohol-based formulations are not suitable for all patients because they can cause stinging when applied to scalps with skin broken as a result of scratching, e.g. in eczema. Alcohol-based lotions are thought best avoided in anyone with asthma, as the evaporating alcohol might irritate the lungs and cause wheezing, perhaps even precipitating an attack of asthma. Such reactions are likely to be extremely rare, but caution is still advised.

Skin irritation, hypersensitivity reactions (such as anaphylaxis, angioedema and swollen eyes) and chemical burns have been reported with *malathion* products.

Complementary therapies – not to be recommended

There are a variety of complementary therapies, many derived from herbs. These include tea tree oil, coconut oil, eucalyptus and lavender-based products. Homeopathic remedies are also available. There are many home remedies, including the copious use of hair conditioner, baby oil, *petroleum jelly* and diluted white vinegar. Electric combs have also been advocated. The problem with all these treatments is lack of evidence of effectiveness. Some of them can cause skin irritation. Use of these products is not generally recommended.

Other points

Teamwork among pharmacists, GPs, health visitors and nurses (particularly those involved in advising on head lice) is important to ensure consistency of messages and treatment information. Pharmacists can also liaise with health visitors, school nurses and public health specialists to communicate with schools in the area and ensure the accuracy and currency of information given to parents and children. Local public health guidance should be consulted and followed.

Head lice in practice

Case 1

A young mother, who often comes into your pharmacy to ask for advice and buy medicines for her children, asks for a product to prevent head lice. Her children have not got head lice, but she wants to use a treatment 'just to be on the safe side' as she is embarrassed by the thought of such a thing. On questioning, you find out that the children are aged 5 and 7 years and that there are no signs of infection, such as itching scalps. The children's heads have not been checked for lice. She is not sure how to go about making such a check. There has not been any communication from the children's school to indicate that head lice are a current problem at the school. This lady explains that she is very hygiene conscious and would hate her children to get nits.

The pharmacist's view

Treatment should not be used unless there is evidence of infection. Based on what this mother has said, it seems unlikely that her children have head lice, and there is no evidence of a current problem at school. However, head lice are easily transferred from one head to another, particularly among schoolchildren, and the pharmacist can explain that there is no stigma attached to having them. Most children get head lice at some point. It would also be helpful to explain that head lice and hygiene are not linked, and they infect people from all walks of life, equally. If any live lice are found, treatment can be recommended at this point. You suggest she might want to watch a YouTube video on how to check for head lice, such as the Bug Busters video.

The doctor's view

The advice given by the pharmacist is very helpful. It would have certainly been a lot quicker and more convenient, but inappropriate, to have sold a treatment. Hopefully, the information given by the pharmacist will allay her anxiety regarding hygiene and lice. This demonstrates an important role of health education that can be provided in the pharmacy.

THREADWORM (PINWORM)

Threadworm or pinworm (*Enterobius vermicularis*) is a parasitic worm that infects the intestines of humans. It is very common in young children, and parents may seek advice from the pharmacist. As with head lice infections, many parents feel embarrassed about discussing threadworm and feel ashamed that their child is infected. Pharmacists can give reassurance that this is a common problem. In addition to recommending the OTC anthelmintic (anti-worm) treatment *mebendazole*, it is essential that advice be given about hygiene measures to prevent reinfection. GPs in England are now discouraged from prescribing threadworm treatment as this is on the list of OTC products people are expected to purchase. Therefore, pharmacists have a more important role in guiding advice and management of threadworm.

What you need to know

- Age
- Signs of infection
  - Perianal itching
  - Appearance of worms
- Other symptoms
- Duration
- Significance of questions and answers
- Recent travel abroad
- Other family members affected
- Medication

Age

Threadworm infection is very common in schoolchildren.

Signs of infection

Usually, the first sign that parents notice is the child scratching his or her bottom. Older children may complain of an itchy bottom, particularly at night. Perianal itching is a classic symptom of threadworm infection and is caused by an allergic reaction to the substances in and surrounding the worms' eggs that are laid around the anus. Sensitisation takes a while to develop. Therefore, in someone infected for the first time, itching will not necessarily occur.

Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin. The eggs are secreted together with a sticky irritant fluid onto the perianal skin. Persistent scratching may lead to secondary bacterial infection, but this is rare. If the perianal skin is broken and there are signs of weeping, referral to the doctor for antibiotic treatment would be advisable.

Loss of sleep due to itching may lead to tiredness and irritability during the day. Itching without the confirmatory sighting of threadworms may be due to other causes, such as an allergic or irritant dermatitis caused by soaps or topical treatments used to treat the itching. In some patients, scabies or fungal infection may produce perianal itching.

Appearance of worms

The worms themselves can be easily seen in the faeces as white- or cream-coloured, thread-like objects, up to 13 mm in length and less than 0.5 mm in width. A picture of threadworms is provided in Figure 10.7. Males are smaller than females. The worms can survive outside the body for a short time and hence may be seen to be moving. Sometimes, the worms may be seen protruding from the anus itself. The eggs are too small to be seen and can survive for up to 3 weeks outside the body.

Other symptoms

In severe cases of infection, diarrhoea may be present and, in girls, vaginal itch.

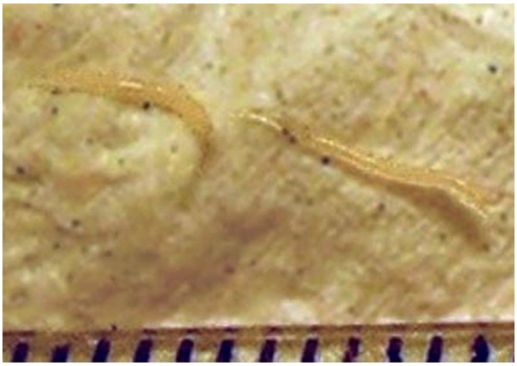

FIGURE 10.7 Picture of threadworms. *Source:* Wikimedia/Public Domain.

Duration

If a threadworm infection is identified, the pharmacist needs to know how long the symptoms have been present and to consider this information in the light of any treatments tried.

Recent travel abroad

If any infection other than threadworm is suspected, patients should be referred to their GP surgery for further investigation. If the person has recently travelled abroad, this information should be passed on to the surgery so that other types of worm can be considered.

Other family members

Threadworm infection spreads rapidly in families and if one child is infected, it is highly likely that all other people in the family home have it. The reason for this is that the sticky eggs get under fingernails at night, following scratching, and get passed on to the other children, and then other household members, by oral ingestion. The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

Medication

The pharmacist should enquire about any treatment already tried to treat the symptoms. Correct use is essential if it is to be successful. You should therefore also ask how the treatment was used, in order to establish whether treatment failure might be due to incorrect use.

When to refer

Infection other than threadworm suspected
Recent travel abroad
Medication failure
Children under 2 years of age
Pregnant or breastfeeding

MANAGEMENT

Parents are often anxious and ashamed that their child has a threadworm infection, thinking that lack of hygiene is responsible. You can reassure parents that threadworm infection is extremely common and that any child can become infected; infection does not signify lack of care and attention.

Threadworms are treated using a dual approach of *mebendazole* plus specific hygiene measures to avoid reinfection. If symptoms remain after treatment, patients should see their doctor.

Mebendazole

Mebendazole inhibits the uptake of glucose by the worms, causing immobilisation and death within a few days. It is largely unabsorbed from the gut and systemic adverse effects are minimal. It is the preferred treatment for threadworms and is an effective, single-dose treatment that should be given to everyone in the family at the same time (apart from young babies). The rationale for this is that not all people get symptoms, but may still be infectious.

The drug is formulated as a suspension or a tablet that is licensed to be given to children aged 2 years and over and to adults, and it is available OTC for those over 2 years of age (via pharmacy sales). A second dose may be needed after 2 weeks if the infection persists. Abdominal pain is listed as a common side effect and diarrhoea as uncommon.

Mebendazole is not recommended for pregnant or breastfeeding women so hygiene measures alone are used.

Although it is not licensed for use in children under 2 years of age, the British National Formulary (BNF) recommends *mebendazole* for treating threadworm infection in children over 6 months. This would require a doctor's, nurse's, or practice pharmacist's prescription in children aged between 6 months and 2 years.

PRACTICAL POINTS

Hygiene measures

Everyone with threadworms needs to follow hygiene measures. Those who can take *mebendazole* need to follow them for 2 weeks and those who are using hygiene measures alone need to follow them for 6 weeks to cover the life cycle of the adult threadworms (see the section 'Hygiene advice' in the following text).

Breaking the cycle of reinfection by careful hygiene can cause the infection to die out without drug treatment, and some people may prefer this. Children under 6 months are best managed without recourse to drug treatment by these means.

Alongside general hygiene advice, this would involve cleaning the bottom gently, but thoroughly, at each nappy change and for parents washing their hands thoroughly before and after each nappy change.

If people who cannot take *mebendazole* (e.g. pregnant women) continue to experience problems after using only hygiene measures, they should be referred to a GP.

Hygiene advice (adapted from Clinical Knowledge Summaries [CKS] guidance)

- Environmental hygiene measures – undertake on the first day of treatment:
  - Wash sleepwear, bed linen, towels and cuddly toys at normal temperatures and rinse well.
  - Thoroughly vacuum and dust, paying particular attention to the bedrooms, including vacuuming mattresses.
  - Thoroughly clean the bathroom by 'damp-dusting' surfaces, washing the cloth frequently in hot water.

- Strict personal hygiene measures – for 2 weeks if combined with drug treatment or for 6 weeks if used alone:
  - Wear close-fitting underpants or knickers at night. Change them every morning.
  - Cotton gloves may help prevent night-time scratching. Wash them daily.
  - Bath or shower immediately after getting up each morning, washing around the anus to remove any eggs laid by the worms during the night.

- General personal hygiene measures – encourage all the time for all household members:
  - Wash hands and scrub under the nails first thing in the morning, after using the toilet or changing nappies and before eating or preparing food.
  - Discourage nail biting and finger sucking.
  - Avoid the use of 'communal' or shared towels or flannels.

ORAL THRUSH (ORAL CANDIDIASIS)

Oral thrush (candidiasis) is an infection of the lining of the mouth, caused by the yeast-like organism, *Candida albicans* (rarely, other *Candida species* are also implicated). It can also cause infection around the nappy area in babies and genital thrush, mostly seen in adults. Oral thrush in babies over the age of 4 months can usually be treated by the pharmacist.

What you need to know

Age
    Infant, child, adult or elderly
Affected area
Appearance
Previous history
Medication

Significance of questions and answers

Age

Oral thrush is common in babies, particularly in the first few weeks of life. Sometimes, the infection is passed on by the mother during childbirth. In older children and adults, oral thrush is seen less, but may occur after antibiotic use or with inhaled corticosteroid treatment (see the section 'Medication' in the following text). It is also seen commonly with diabetes. Unless these causes can be readily identified and managed in this older group, it may also be a sign of immunosuppression, and referral to the doctor is usually advisable.

Affected areas

Oral thrush affects the surface of the tongue and the insides of the cheeks.

Appearance

When candida infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds; indeed, they may be confused with the latter by mothers when oral thrush occurs in babies. An example of the typical appearance of oral thrush in a child is given in Figure 10.8. The distinguishing feature of plaques due to candida is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

In the nappy area, candida infection presents differently with characteristic red papules around the outer edge of the area of nappy rash, so-called satellite papules. Another feature is that the skin in the folds is nearly always affected. Candida infection is a common component of nappy rash (see the section 'Nappy rash', earlier in this chapter and Figure 10.5).

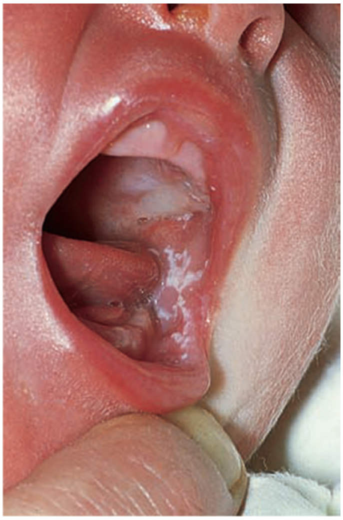

FIGURE 10.8 Typical appearance of oral thrush in a child.

Previous history

In babies, recurrent infection is uncommon, although it may sometimes occur following reinfection from the mother's nipples during breastfeeding or from inadequately sterilised bottle teats in bottle-fed babies. Patients who experience recurrent infections should be referred to their doctor for further investigation. Although a rare cause, persistence of oral thrush and/or thrush of the nappy area after the neonatal period may be the first sign of human immunodeficiency virus (HIV) infection.

Medication

Antibiotics

Some drugs predispose to the development of thrush. For example, broad spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection. There may be a candida nappy rash, as well. It would be useful to establish whether the patient has recently taken a course of antibiotics.

Immunosuppressants and corticosteroids

Any drug that suppresses the immune system will reduce resistance to infection, and immunocompromised patients are more likely to get thrush. Cytotoxic therapy and corticosteroids predispose to thrush. Patients using inhaled corticosteroids for asthma are prone to oral thrush because the drug is deposited at the back of the throat during inhalation, especially if inhaler technique is poor. Rinsing the throat with water after using the inhaler may be helpful, and using spacing devices reduces the chances of this problem.

When to refer

Babies under 4 months

Adults and older children without obvious cause

Recurrent/persistent thrush

Failed medication

Treatment timescale

Oral thrush should respond to treatment quickly. If the symptoms have not cleared up within 1 week, patients should see their doctor.

MANAGEMENT

The pharmacist should identify any treatment already tried. In a child with recurrent thrush, it would be worth enquiring about previously prescribed therapy and its success.

Miconazole

Miconazole oral gel is available for sale OTC to treat oral thrush. Preparations containing *nystatin* are also effective, but are restricted to prescription-only status and may be prescribed by the GP, nurse or health visitor.

Miconazole oral gel is orange-flavoured and should be applied to the plaques using a clean finger four times daily after eating in adults and children over 6 years and twice daily in younger children and infants. *Miconazole* oral gel is not licensed for use in children under 4 months of age because of the risks of choking if it is not applied carefully based on case reports of harm to young babies. When treatment is likely to be indicated in a baby under 4 months, parents should be referred to a GP surgery. For young babies, the gel can be applied at the front of the mouth directly to the lesions, also using a clean finger. Care needs to be taken not to touch the throat. The gel should be retained in contact with the mouth lining (oral mucosa) for as long as possible. Treatment should be continued for 2 further days, after the symptoms have apparently gone, to ensure that all infection is eradicated.

The licence for *miconazole* oral gel says it must not be applied to the nipple of a breastfeeding woman for administration to an infant, due to the risk of choking.

Miconazole oral gel is not recommended for patients taking *warfarin*. There is evidence of an interaction with *warfarin*, leading to an increased risk of bleeding. There are other drug interactions related to drugs usually only taken by adults; if the child is taking unusual medicines, the Summary of Product Characteristics or BNF should be checked.

PRACTICAL POINTS

Oral thrush and nappy rash

If a baby has oral thrush, the pharmacist should check whether nappy rash is also present. When both oral thrush and candida involvement in nappy rash occur, both should be treated at the same time. An antifungal cream containing *miconazole*, *econazole* or *clotrimazole* can be used for the nappy area.

Breastfeeding

When the mother is breastfeeding, care needs to be taken to carefully clean breasts and nipples. If the nipples are itchy, cracked or have flaky skin, candida infection should be suspected. Nipple thrush can be treated with *miconazole* cream, with care to remove any cream before feeding. For bottle-fed babies, particular care should be taken to sterilise bottles and teats.

Oral thrush in practice

Case 1

Helen Jones, a young mother, brings her daughter, Jane, to see you. Mrs Jones wants you to recommend something for Jane's mouth that has white patches on the tongue and inside the cheeks. Jane is 8 years old and is not currently taking any medicines. She has not recently had any antibiotics or other prescribed medicines. Jane does not have any other symptoms.

The pharmacist's view

Jane should be referred to her GP surgery, since thrush is rare in children other than infants. There is no apparent precipitating factor, such as recent antibiotic therapy, and Jane should see her doctor for further investigation.

The doctor's view

Helen Jones should be advised to take Jane to the doctor's surgery. The description is certainly suggestive of oral thrush. If there were any doubt as to the diagnosis, a swab could be taken for laboratory examination. If Jane did have thrush, then treatment, such as *miconazole* oral gel or *nystatin* oral suspension, might be prescribed.

The next concern would be to determine a precipitating cause. General enquiries about Jane's health would be necessary. The doctor would be in a good position to know of previous medical history, including any transfusions and family history. A general physical examination would be carried out, looking, in particular, for signs of anaemia, any rashes or bruising, enlargement of lymph nodes (glands), enlargement of abdominal organs (e.g. the liver or spleen) or any other masses. The doctor would be looking for signs of diabetes or of a malignancy, such as leukaemia or lymphoma. Almost certainly, blood tests would be arranged. The doctor would also make an assessment of any HIV risk factors and counsel Helen and Jane accordingly before initiating any further action.

Case 2

A young mother asks for something to treat her baby son's mouth. You look inside the baby's mouth and see white patches on the tongue and inside the cheeks. The baby is 5 months old and has had the patches for 2 days: at first his mother thought they were milk curds. He had some antibiotic syrup last week for a chest infection and finished it yesterday. The baby is not taking any other medicines and his mother has not given him anything to treat the symptoms yet. He has no other symptoms.

The pharmacist's view

You could recommend the use of *miconazole* oral gel for this baby. He has a thrush infection following antibiotic therapy that should respond well to the imidazole antifungal. His mother should use 2.5 ml of gel twice daily after feeds, applying it to the inside of the front of the mouth and tongue using a clean finger. Treatment should be continued for 2 days after the problem has cleared up. If the symptoms have not gone after 1 week, the baby should be seen by a health visitor or GP.

The doctor's view

Oral thrush is the most likely diagnosis. It would be reasonable for the pharmacist to institute treatment in view of the baby's age alone, although in this case antibiotic treatment is an additional precipitating factor. If there were any doubt as to the diagnosis, his mother could seek the advice of the health visitor. It might be useful to ask the mother whether or not she is breastfeeding in which case careful attention should be paid to cleaning the breasts and nipples, particularly before and after feeds. If she has symptoms suggesting thrush of the nipples (such as soreness and flaking skin), then *miconazole* cream can be used with care to clean it off prior to feeding. If she is bottle-feeding, extra care will be needed with sterilising bottles and teats.

Note: The Cochrane reviews and NICE guidelines do not have a date as they are often updated. The most up-to-date version should be consulted.

Section	**CKS (`cks.nice.org.uk`)**	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Infections and rashes	☑ Chickenpox ☑ Measles ☑ Parvovirus B19 infection (fifth disease) ☑ Rubella ☑ Meningitis – bacterial meningitis and meningococcal disease ☑ Feverish children – management ☑ Impetigo	☑ Chickenpox ☑ Measles ☑ Roseola ☑ Slapped cheek syndrome (fifth disease) ☑ Rubella ☑ Meningitis ☑ Fever in children ☑ Is your baby or toddler seriously ill? ☑ Impetigo	• Fever in under 5s: assessment and initial management, NG143. • Impetigo: antimicrobial prescribing, NG253.	• UKMI. Do NSAIDs increase the risk of severe skin reactions in children with chickenpox? `www.sps.nhs.uk/wp-content/uploads/2019/10/UKMi_QA_NSAIDs_Chickenpox_Aug-2019.pdf` (Accessed 23 February 2022) • When should I worry? Information for parents on Respiratory Tract Infections. `www.whenshouldiworry.com` (accessed 23 February 2022) • Public Health England (2019). *Immunisation Against Infectious Diseases. The Green Book: Measles* (updated December 2019). `www.gov.uk/government/publications/measles-the-green-book-chapter-21` (Accessed 23 February 2022) • *Clinical Knowledge Summaries: Measles.* `https://cks.nice.org.uk/measles` (Accessed 23 February 2022) • *Clinical Knowledge Summaries: Scenario – Childhood Immunisations* `https://cks.nice.org.uk/topics/immunizations-childhood/` (Accessed 23 February 2022)

Infantile colic	☑	☑ Colic	• Cry-sis is a support group for families with excessively crying, sleepless, and demanding children, `www.cry-sis.org.uk` (accessed 23 February 2022) • Cochrane Review. Probiotics to prevent infantile colic.
Teething	☑	☑	
Nappy rash (napkin dermatitis)	☑	☑	
Head lice	☑		• Public Health England (PHE) (2013, updated 2018). PHE Guidance. Head lice (pediculosis). `www.gov.uk/guidance/head-lice-pediculosis` (Accessed 23 February 2022) • British Association of Dermatologists (2020). Patient Information Leaflet: Head lice, `www.bad.org.uk/patient-information-leaflets` (Accessed 23 February 2022)
Head lice and nits	☑		
Threadworms (pinworms)	☑	☑	• Tidy, C. *et al.* (2020). Patient Information. Threadworm, `https://patient.info/skin-conditions/itchy-bottom-pruritus-ani/threadworms` (Accessed 23 February 2022)
Oral thrush (oral candidiasis)	☑	☑	

CHAPTER 11

Insomnia and Mental Well-Being

This chapter covers insomnia and its management. As insomnia often occurs alongside other mental health problems we also briefly explore mental well-being and the symptoms of stress, anxiety and depression, including assessment of the risk of suicide.

INSOMNIA

A request for 'something to help me sleep' is common in pharmacies and an estimated one-third of adults experience problems with sleeping at least once a week. Insomnia is difficult to define; a simple description is that the patient is dissatisfied with their sleep and has resultant daytime symptoms, such as poor concentration, mood disturbance and fatigue. Around half of patients who are diagnosed with insomnia also have a mental health problem, such as anxiety, depression, stress, post-traumatic stress disorder and substance misuse.

Temporary insomnia can often be managed by the pharmacist, starting with identifying where changes might be needed in sleep hygiene (bedtime routines). Pharmacists have an important role in offering non-drug approaches and short-term sleep aids where they are appropriate. A key role is in identifying patients who should be referred because of concerns about their mental well-being and who may need general practitioner (GP) assessment.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
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What you need to know

- Age
- Symptoms
    - Difficulty in falling asleep
    - Waking during the night
    - Early morning waking
    - Poor sleep quality
    - Snoring, sleep apnoea, restless legs
- Depression and anxiety
- Duration
- Previous history
- Contributory factors
    - Shift work, being away from home
    - Alcohol
    - Caffeine – coffee, tea, cola
    - Stressful events
- Current sleep hygiene
- Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Both the quantity and quality of sleep change with increasing age. The total duration of sleep becomes shorter and there is less deep (stage 4) sleep. Nocturnal waking is more likely because sleep is generally shallower and thus more vulnerable to disturbance. However, older people may still feel that they need more sleep and wish to take a medicine to help them sleep. Feeling sleepy during the daytime may lead them to nap during the day and this reduces their need to sleep at night even further.

Many babies, toddlers and infants have poor sleep patterns, which understandably can cause anxiety to parents. In these situations, referral to the health visitor or doctor can be helpful. There are also some useful self-help books and pamphlets available.

Symptoms

Insomnia can be broken down into difficulty in getting to sleep, difficulty in staying asleep, early wakening or feeling unsatisfied by sleep despite adequate time and opportunity to sleep. Often a mixture of these can occur. These are associated with complaints of impaired daytime functioning, such as poor concentration, mood disturbance and daytime tiredness. It is important to distinguish between these different components of sleep problems:

Difficulty in falling asleep is often a symptom of worry and anxiety. Sleep latency is the time taken to fall asleep (normally up to 30 min).

Early morning waking may be a symptom of depression.

Waking during the night and poor sleep quality (further questioning is needed to understand why). Sleep may be disturbed by snoring, sleep apnoea or restless legs. All of these can be associated with increased cardiovascular risk, and hence referral to the GP may be necessary. Both snoring and sleep apnoea are amenable to treatment. Restless legs are more difficult to manage.

Sleep may also be disturbed by underlying physical conditions, such as heart disease; chronic obstructive pulmonary disease or asthma; neurological disease (e.g. Alzheimer's disease or Parkinson's disease); overactive thyroid; joint or muscle pains; or chronic pain. The need to empty the bladder at night can also be a problem. Any of these may require referral to the GP.

Depression and anxiety

Depression is an important cause of insomnia. Early morning waking is a classic symptom of depression. The patient may describe few problems in getting to sleep, but wakes in the early hours and is not able to get back to sleep. It is usually associated with feeling very unhappy and ruminating on things like hopelessness or worthlessness. This pattern requires referral to the doctor for further investigation.

The onset of symptoms of bipolar disorder may be associated with lack of sleep due to the mind working overtime. It is possible that insufficient sleep may actually trigger an episode of mania in bipolar disorder.

Stress and anxiety can also cause insomnia and are usually associated with difficulty in getting off to sleep because of an overactive mind and excessive worrying. This is something that many people experience, particularly before an important occasion, e.g. an examination. If, however, this occurs as a more regular pattern, referral to the GP may be indicated.

Duration

Sleep disorders are classified as follows:

Transient (days)

Short term (up to 4 weeks)

Chronic (longer than 4 weeks)

All chronic cases should be referred to the doctor.

Previous history

Ask whether this is the first time problems in sleeping have occurred or whether there is a previous history. Where there is a previous history, it is helpful to know what treatments have been tried. It is also useful to be aware of a history of depression or anxiety or other mental health problems.

Contributory factors

1. Shift work with changing shifts is a classic cause of sleep problems. Those who work away from home may experience difficulty in getting a good night's sleep because of the combination of travelling and staying in unfamiliar places.
2. Alcohol – While one or two drinks can help by decreasing sleep latency (the length of time taken to fall asleep), the sleep cycle is disturbed by heavy or continuous alcohol consumption.
3. Life changes can cause disrupted sleep, e.g. change or loss of job, moving house, bereavement, loss or separation or the change of life (i.e. menopause).
4. Other stressful life events might include examinations, job interviews, celebrations (e.g. Christmas) and relationship difficulties.
5. Obesity can be associated with sleep apnoea and snoring, both of which can interrupt sleeping.
6. Electronic devices and 'blue screen' effects: Blue light suppresses melatonin release so can disrupt sleep. Blue light helps to maintain alertness and hence this is valuable during the day, but unhelpful at night.
7. Consider the possibility of dependence on recreational drugs, such as cocaine.

Current sleep hygiene

It is worth asking about the factors known to contribute to effective sleep hygiene (see the section 'Practical points' in the following text).

Caffeine has a significant impact and there is an association between the daily intake of caffeine, sleep problems and daytime sleepiness. In excess amounts, caffeine can also trigger a fast heart rate, anxiety and restlessness. Caffeine is metabolised by the CYP1A2 enzyme and stays in the body for several hours; 4–6 h after a cup of coffee, the body will only have removed half of it. A caffeinated soft drink or a cup of tea or coffee within a few hours of bedtime can result in enough caffeine in the system to affect sleep. The effects are broad, including prolonged sleep latency (i.e. longer time taken to fall asleep), shorter total sleep time, increase in light sleep and shortening of deep sleep time, as well as more frequent awakenings.

Alcohol consumption is also an important consideration. Although it can help people fall asleep quickly, it can disrupt sleep patterns and stop deep sleep. It also causes diuresis, which results in the need to urinate at night. Problem drinking can aggravate anxiety and depression (or can cause them), and therefore alcohol dependence should be considered. When people complain of poor sleep, make tactful enquiries about alcohol intake and explain why it is relevant.

Medication and comorbidities

Some drugs can cause or contribute to insomnia, including decongestants, selective serotonin reuptake inhibitors (SSRIs) and serotonin/noradrenaline reuptake inhibitors, monoamine oxidase inhibitors, *methylphenidate*, corticosteroids, appetite suppressants and *phenytoin* and *theophylline*. Medical problems can be associated with insomnia through pain (e.g. angina, arthritis, cancer and gastro-oesophageal reflux) or breathing difficulties (e.g. heart failure, chronic obstructive airways disease and asthma). Diuretics may cause diuresis at night and the need to pass urine disrupts sleep. Other medical conditions, such as hyperthyroidism and Parkinson's disease, can also cause insomnia.

When to refer

Suspected depression or a regular pattern of anxiety
Chronic problem (longer than 4 weeks' duration)
Children under 16 years
Snoring, apnoea, restless legs
Associated physical conditions
Suspected alcohol problems/dependency
Recreational drug dependence
If prescribed medication is suspected to be the cause
Taking prescribed medication for mental health problem

Treatment timescale

There should be an improvement within days; refer after 1 week if the problem is not resolved.

MANAGEMENT

Addressing sleep hygiene is the main intervention in insomnia. As it is likely to take at least a week to re-establish healthy sleep patterns, over-the-counter (OTC) products to aid sleep (the antihistamines *diphenhydramine* and *promethazine)* can help during the transition period. They can also be useful in periodic and transient sleep problems. These products are advertised direct to the public, and pharmacists sometimes report difficulties in declining sales for continued use. Explaining that they are for short-term use only is important.

Sleep hygiene

Sleep hygiene includes behavioural factors, the sleep environment and the times of going to bed and waking up. Key points are as follows:

- **Explain 'normal' sleep and how age affects sleep patterns**
- **Behavioural factors**
  - Avoid napping during the day as this reduces the 'drive to sleep' later.
  - Avoid caffeine after midday; avoid nicotine, alcohol and large meals within 2 h of going to bed. Avoid using alcohol to try and help sleep.
  - Avoid exercise within 4 h of bedtime (although exercise earlier in the day is beneficial).
  - Avoid watching or checking the clock through the night; this increases anxiety.
  - Avoid watching TV or using phones, tablets or computers for 2 h before going to bed.
  - Avoid going to bed too early – go to bed when sleepy.
  - Increase exposure to bright light in the morning.
  - Using visual imagery in bed (mindfulness) can reduce 'racing' thoughts.

- **The sleep environment**
  - Maintain a comfortable sleeping environment: not too hot, cold, noisy or bright.
  - Minimise bright light, including from electronic devices.
  - Use thick curtains or blinds, an eye mask and earplugs to stop you being woken up by light and noise.
  - Try to create a relaxation period before going to bed. Try taking a warm bath or listening to calming music. Relaxation exercises may help.
  - Only use the bedroom for sleep and sexual activity.

  - Writing a list of worries, and any ideas about how to solve them, before going to bed can help in forgetting about them until the morning.

- **Timing of sleep**
  - Establish fixed times for going to bed and waking up every day, even after a poor night's sleep and at weekends.

Antihistamines (*diphenhydramine* and *promethazine*)

Antihistamines are 'sleep aids' that reduce sleep latency and nocturnal waking. They should be taken 20–30 min before bedtime and can be recommended for adults and children over 16 years. Tolerance to their effects can develop, and they should not be used for longer than 7–10 consecutive nights. *Diphenhydramine* has a shorter half-life than *promethazine* (5–8 h compared with 8–12 h). Following a 50 mg dose of *diphenhydramine*, there is significant drowsiness for 3–6 h. These antihistamines have anticholinergic/antimuscarinic side effects, including dry mouth and throat, constipation, blurred vision and tinnitus. These effects will be enhanced if the patient is taking another drug with anticholinergic effects (e.g. tricyclic antidepressants and phenothiazines), but patients taking these drugs for mental health problems should be referred anyway. Lower urinary tract symptoms in men ('prostatic hypertrophy') and angle-closure glaucoma (patients have a history of an acute event) are contraindications to the use of *diphenhydramine* and *promethazine*. *Diphenhydramine* and *promethazine* should not be recommended for pregnant or breastfeeding women.

Complementary therapies

Some patients prefer alternative treatments for insomnia, perceiving them as more natural. *Herbal remedies* have been traditionally used for insomnia, with *valerian* and *hops* being the most commonly used ingredients. They are not recommended for pregnant or breastfeeding women. In studies, side effects have been mild and transient and with no differences from placebo. Results of a systematic review suggested that *valerian* produces a subjective improvement of insomnia, but effectiveness was not demonstrated from objective measures. *Hops* (sometimes with *valerian*) are also commonly used, but there is no definitive evidence of efficacy.

Aromatherapy

A systematic review concluded that lavender oil may be of small-to-moderate benefit in helping with sleep. Lavender oil has been shown to induce a sense of relaxation, as has camomile. One or two drops of the essential oil sprinkled on a pillow or three or four drops in a warm (not hot) bath or a diffuser may be used and this is unlikely to cause harm.

Melatonin

Melatonin is available only as a prescription-only medicine (POM) in the United Kingdom (UK). It is widely purchased and used in the United States to treat insomnia, where it is regarded as a nutritional supplement rather than a medicine. *Melatonin* is a hormone produced by the pineal gland during darkness and is thought to regulate sleep. Studies have shown that *melatonin* levels are lower in the elderly. Supplementation with *melatonin* can raise levels. *Melatonin* has a short half-life (2–3 h) and is subject to first-pass metabolism. Sublingual or controlled release products are therefore popular in the United States. A systematic review concluded that *melatonin* has modest effects, with decreased sleep onset latency, increased total sleep time and improved sleep quality. The licensed UK products are for people aged over 55 and for up to 3 weeks' use. There are some other melatonin products available on prescription in the UK for short-term treatment of jet lag.

PRACTICAL POINTS

Exercise

A systematic review found there is evidence that taking part in an exercise training programme had moderately positive effects on sleep quality in middle-aged and older adults.

Bathing

A warm bath 1–2 h (not immediately) before bedtime can help induce sleep.

Using heat

An electric blanket can help sleep by relaxing the muscles and increasing the brain temperature. The effect is not needed throughout the night, only in inducing sleep; using a timer to switch off the blanket after 1 or 2 h is sensible.

Sleep masks and ear plugs

A systematic review concluded that there is some evidence that sleep masks and earplugs increase the amount of time spent asleep. This seems common sense because noise and bright light are known to disrupt sleep, but it is helpful to have evidence from research studies.

Nasal plasters for snoring

These adhesive nasal strips work by opening the nostrils wider and enabling the body to become accustomed to breathing through the nose rather than through the mouth. A plaster is applied each night for up to 1 week to retrain the breathing process. The strips have been suggested for use in night-time nasal congestion during pregnancy.

Benzodiazepines and z-drugs

Despite the UK Committee on Safety of Medicines statement 30 or more years ago on the use of benzodiazepines, recommending that these drugs are for short-term use only and should not be used for longer than 2–4 weeks, pharmacists are well aware that some patients continue to be on them for long periods of time. In some areas, the rate of repeat prescribing of benzodiazepine and z-drugs to older people remains high.

In older people taking benzodiazepines, such as *nitrazepam* and *temazepam*, and the z-drugs, such as *zolpidem* and *zopiclone*, long-term use can cause considerable harm. Z-drugs are no better than benzodiazepines in this regard. There is no evidence that they continue to help with sleep beyond a few weeks, but they are addictive, and many people get discontinuation symptoms if they stop them abruptly. Long-term use can aggravate anxiety and depression. Use is associated with road traffic accidents. In frail people, they can cause confusion, unsteadiness, falls and fractures. They can interact with alcohol causing profound sedation. Despite these facts, they are often prescribed for years, sometimes to younger fitter people who become more susceptible to the adverse effects if they continue to take them as they age. There does seem to be some complacency, with a view that they do little harm, but stopping them can be difficult.

Weaning patients off benzodiazepines and z-drugs can succeed, provided withdrawal is slow, supported and structured. Drug withdrawal may take 3 months to a year; however, some people may be able to withdraw in less time. A gradual tapering regimen with the ability to incrementally reduce doses and to titrate to very low doses over a period of months is needed. This may mean changing the medicinal form to a liquid. This is an area where pharmacists and doctors can work together and discussions with local doctors can initiate this process. Advice on how to support people to 'come off' benzodiazepines can be found at: `https://cks.nice.org.uk/benzodiazepine-and-z-drug-withdrawal`.

MENTAL WELL-BEING

For patients with stress, anxiety or depression, simply the opportunity to talk to a good, attentive, accepting listener can be very beneficial and even a short conversation can be helpful. If depression is suspected, a referral to the GP practice is usually indicated. The patient may benefit from seeing a counsellor or from cognitive behavioural therapy (CBT) which the practice could arrange. More severe depression may be treated with antidepressants.

Stress and anxiety can manifest in different ways and can sometimes be attributed to a stressful upcoming event, such as a house move or exams (situational anxiety) or in the period after a life stressor, such as bereavement or a relationship breakdown (adjustment disorder). The main symptoms are summarised in the table below.

Recognition: Key symptoms of stress and anxiety

Physical symptoms	**Emotional symptoms**
Restlessness	Chronic, excessive worrying about everyday issues and that is disproportionate to any inherent risk
Insomnia	Difficulty in concentrating
Muscle tension	Nervousness
Headaches	Irritability
Easily fatigued	Hypersensitivity to sounds, sights and smells
Sweating	
Palpitations	
Dizziness; light-headedness	
Epigastric discomfort	
Trembling	

Some OTC or prescribed medications can cause anxiety as a side effect, including *salbutamol*, *theophylline*, beta blockers, herbal medicines (including *ma huang*, *St John's wort*, *ginseng*, *guarana* and *belladonna*), corticosteroids and some antidepressants.

Depression is characterised by a loss of the ability to feel pleasure and by feelings of hopelessness and sadness. It can manifest in different ways and with physical as well as emotional symptoms, which are summarised in the table below.

Recognition: Key features of depression

Physical symptoms	**Emotional symptoms**
Moving or speaking more slowly than usual	Continuous low mood and sadness
Disturbed sleep	Feeling hopeless and helpless
Changes in appetite and weight	Having low self-esteem, feeling worthless
Constipation	Feeling guilt-ridden
Unexplained aches and pains	Feeling irritable and intolerant of others
Lack of energy	Having no motivation or interest in things
Loss of libido	Finding it difficult to make decisions
Changes in menstrual cycle	Not getting any enjoyment from life
	Feeling worried and anxious
	Having suicidal thoughts

PRACTICAL POINTS

Guides, tools and activities

Stress and anxiety are commonplace and a normal part of modern living. There are useful online guides to self-management of stress, anxiety and related conditions. Patients may benefit from being signposted to these. A good example from England is seen on the National Health Service (NHS) Health A–Z website: `https://www.nhs.uk/mental-health/self-help/`. In Scotland, there are similar resources: `https://www.nhsinform.scot/illnesses-and-conditions/mental-health#mental-health-self-help-guides`.

Bereavement is also something the pharmacist may be able to help with. Just listening and empathising can go a long way to providing comfort. Knowing where to refer patients for support is also important. For example, Cruse has some useful resources; see: `https://www.cruse.org.uk/get-help/coping-grief`.

Exercise for anxiety and depression

Alternatives to medication are important especially as there is evidence that antidepressants are overall not beneficial in mild depression. There is evidence that regular exercise is beneficial in reducing symptoms of depression. A Cochrane review concluded that exercise seems to improve depression when compared with no treatment or a control intervention, but commented that in the more robustly designed studies, the positive effects of exercise were smaller.

The Mental Health Foundation has run a campaign encouraging exercise in people with depression. Their website (`www.mentalhealth.org.uk`) gives free access to podcasts and booklets aimed at both professionals and patients, including a ‘How to’ guide ‘Look after Your Mental Health Using Exercise’.

St John’s wort (Hypericum) and the pharmacist

St John’s wort, a *herbal remedy* derived from the plant *Hypericum perforatum*, is commonly used in the self-treatment of depression, and pharmacists will encounter people who come into the pharmacy to buy it and those who seek the pharmacist’s opinion about whether to take it or not. In a study among people with depression, one in three had tried *St John’s wort*.

Systematic reviews and meta-analysis found that overall the evidence relating to *St John’s wort* is inconsistent and complex. In mild-to-moderate depression, *St John’s wort* preparations and standard antidepressants appear to show similar effects. In major depression, *St John’s wort* preparations had only small benefits over placebo. The active component is thought to be similar to that of SSRIs. Bear in mind that there is variation of effect not only among the trials and their results, but also among the different manufacturers’ products tested. Products may differ considerably in their pharmaceutical quality and cannot be considered equivalent. Lack of standardisation of the amount of active ingredient is an issue; preparations can vary widely.

St John's wort can induce drug metabolising enzymes so potentially can interact with traditional medicines. Switching from one brand to another can change the degree of enzyme induction. If a patient stops taking it, the concentration of interacting drugs may increase, with the possibility of toxicity.

You will make your own decisions about whether to recommend *St John's wort* and how to respond to patients' requests. Patients will make their own decisions about whether or not to take it and they can buy it from health food shops if they want to. Your advice needs to take this context into account. A cause for significant concern is drug interactions and pharmacists can advise patients if this is a potential problem.

The NHS in England advises:

> *'While there's evidence of its effectiveness, many experts advise against its use, because the amount of active ingredient varies among individual brands and batches, making the effects unpredictable. Taking St John's wort with other medicines, such as anticonvulsants, anticoagulants, antidepressants and the contraceptive pill, can also cause serious health problems.'*

The point about not taking *St John's wort* with other treatments for depression is important as the combination can cause an unpleasant adverse drug reaction with antidepressants, called serotonin syndrome. Pharmacists should be alert to this problem as patients may not be aware of this and may think it will enhance their prescribed medication.

The Medicines and Healthcare products Regulatory Agency advises that women taking hormonal contraceptives for pregnancy prevention should not take herbal products containing *St John's wort* as it will reduce their efficacy; this applies to all hormonal contraceptives.

SUICIDAL THOUGHTS AND SUICIDE PREVENTION

In the course of conversations with patients who come to the pharmacy asking about stress, anxiety or insomnia, or about depression (including enquiring about *St John's wort*), a patient may directly disclose or indirectly indicate that they are feeling like they might harm themselves. Mental illness plays a significant role in suicidal thoughts; other factors are also important. Medicines are the second commonest method of suicide and reducing access to means of suicide may include restricting availability of medicines for purchase, prescription and in the home. A quarter of those who die by suicide have a comorbid physical health problem and the figure rises to 44% in patients aged 65 and over. Rates of suicide are higher in areas of socioeconomic deprivation.

Being able to respond in an acute situation is essential for pharmacists and their teams. Suicide is a serious matter, but not one to fear. The Zero Suicide Alliance identifies three steps: See, Say and Signpost, and these are considered in turn below.

1. See

'At-Risk' Signals include:

- Someone threatening to hurt or kill themselves, or saying they want to die. . . especially if they have access to means
- Someone posting about death and suicide on social media
- Someone actively searching and researching ways in which to kill themselves
- Someone talking about feeling hopeless or having no purpose
- Someone talking about being in unbearable pain or saying that they feel trapped
- Someone indicating that they feel like a burden to others, or others would be better off without them
- An increase in a person's use of alcohol and drugs
- Someone acting anxious, agitated or reckless
- A change in sleeping habits; sleeping too little or too much
- Withdrawing from others or isolating oneself
- Showing rage or talking about revenge
- Displaying extreme mood swings
- Sudden euphoria

Planning is also a serious risk factor, e.g. giving away possessions and making a will.

2. Say

Research has shown that many community pharmacists and team members in the UK and elsewhere feel afraid of starting a conversation with someone who is showing 'at-risk' signs. It is not unusual to be unsure about what to say or not to say, but any connection can make someone 'think again' about suicide.

- Be direct. This reduces the risk of misunderstanding.
- Do not feel uncomfortable saying the word suicide. Ask the person if they feel like they want to end their life or are feeling suicidal. Using the word

suicide will not put the thought into someone's head or make it more likely that they will end their life.

- If they do have suicidal thoughts, ask them if they have considered a method, made plans or written a note. Have they stored harmful drugs? These are clear indicators of significant intent and high risk.
- Ask if they have already taken any substances, e.g. tablets.
- Ask if they are receiving any help already, e.g. from their GP.
- Discuss them contacting their formal or informal carers or offer to do this for them. If they are known to a local GP practice, you can ask to speak to their GP or the 'duty doctor'.
- If the person has no one and continues to be suicidal, then call for emergency support (normally emergency services or accident and emergency [A&E]). If you think there is an imminent risk call 999. If necessary, ask for the police and request a 'welfare check' – the police can detain the patient under The Mental Health Act. If the patient agrees to go to A&E, you could call ahead and say that they have serious concerns about that person's safety. Alternatively, someone could go to A&E with the patient.

3. Signpost

At local level, some areas will be able to provide quick access to a support worker; however, access to a mental health team can sometimes be difficult. There should be a 24-h Crisis resolution and home treatment team and access is usually only via GP/other doctor. Voluntary organisations are very helpful, including Samaritans.

MENTAL WELL-BEING IN PRACTICE

Case 1

Maureen Thomas, aged about 50 years, comes in asking for something to help her sleep. She says that one of her friends told her that she can get tablets that will help. She explains that her sleep has never seemed good ever since she had her children many years ago, but over the last few weeks, it has got worse. She has started having problems in getting off to sleep and has been waking early and not getting back to sleep. She lies in bed and her mind runs through her problems, constantly. She has had some worries at work and her Mum has been unwell . . . *'but that's all, no more than usual. I've had to put up with a lot worse and managed! I just need a few days' good sleep and I'll be OK'*. She is not on any other medication, has never asked anyone before about her sleeping problem and did not want to bother her GP with them being so busy.

The pharmacist's view

This patient is experiencing a number of sources of stress and difficulty that are likely to be contributing to her sleep problems and she describes sleep disturbance, which is extensive and perhaps indicative of depression. It would be best for her to see the doctor and this will need a careful, persuasive explanation. I would talk with her about sleep hygiene to see if there are any practical actions that she could take. The use of an antihistamine or herbal medicine for a few days would not be harmful, but it may prevent her from seeking advice from the doctor so I would discuss this with her.

The doctor's view

Ideally, this woman should be advised to make an appointment to see her doctor. She might be reluctant to do so, as she gives the impression that she thinks she should be able to cope and should not have to trouble anyone else with her problems. If the pharmacist could persuade her that it is completely acceptable to seek advice from her doctor, this would be the best course of action. She may be depressed and it would be helpful for a doctor to make a full assessment. This would include how she is feeling, how her life is being affected and what other symptoms she may have. It may be that she is also concerned by changes associated with approaching the menopause.

Just the ability to talk to a good, attentive, accepting listener can be very beneficial. She may benefit from seeing a counsellor or CBT which the GP could arrange. She may benefit from an exercise programme or be amenable to individual guided self-help, based on the principles of CBT, or to using computerised CBT. Her consumption of alcohol should be explored as this is a very common underlying contributory factor and is often overlooked. Caffeine consumption should also be discussed. If the underlying problem is moderate or severe depression, then most doctors would also offer her an antidepressant.

Case 2

A man whom you do not recognise as a regular customer asks to speak with you. He tells you that he read an article in the paper yesterday about *St John's wort* and would like to try it. He asks what you think and if it is safe. You invite him into your consultation room and find out that he has been feeling stressed lately in his job. (He is an estate agent and works locally.) He says he is having trouble in sleeping and feels that things are getting on top of him. He is not getting much exercise these days – he used to play football and go training regularly, but since a knee injury he has given it up. He used to enjoy going to the pub with the team after training, but stopped going because it is not the same now that he cannot play. He thinks he might be depressed, but does not want to see his doctor because he does not want to end up on antidepressants. He is not taking any medicines except painkillers for his knee.

The pharmacist's view

If someone asks to buy *St John's wort*, I would consider selling it to them after checking about other medication and asking whether they wanted to discuss anything. I find that some people do not want to see the doctor even when they think they are depressed. In this case, it is because of a dislike of the idea of taking antidepressants. Although there is evidence that antidepressants work, especially in severe depression, it is not so clear-cut for mild depression. CBT would be another option. There is good evidence to support it but its availability varies, although supervised online therapy has widened access. Also some people want to try to manage their depression themselves rather than getting into the formal health system.

If he decided to try *St John's wort*, I would explain that it could take 3–4 weeks to work. I would tell him that it does have some sedative effect and that taking it at night could be helpful.

If it were a woman of childbearing age or pregnant, I would always ask whether she was on the pill, because *St John's wort* interacts with the oral contraceptive pill and makes it less effective. It should not be taken in pregnancy.

The doctor's view

The evidence on the effectiveness of *St John's wort* is variable. Some trials show benefit and others no benefit when compared with placebo. Also, there is considerable variation in the formulation of products. Research has shown that one of its constituents, hyperforin, has a neurotransmitter reuptake inhibiting action and increases the amounts of available serotonin and noradrenaline. Therefore, it probably works in the same way as traditional antidepressants. It is worth advising that licensed antidepressants have been required to demonstrate clear evidence of benefit and their constituents are closely 'quality assured'.

Although this may be a case of work stress, bear in mind that men are notoriously reticent to admit to mental health problems and are at risk of serious illness and suicide. The pharmacist should advise this man to see his GP.

If this man were to come to his GP, it would be important to hear more about how he is being affected by his problem, i.e. what it is like for him, what is the impact on his life, how he feels, etc. It would be useful to hear about his understanding of the problems and how he thinks he can be helped and whether he would be prepared to see a counsellor. The GP would need to do a risk assessment and check whether he is feeling suicidal and, if so, whether he has specific plans as to how he might kill himself.

Once an initial assessment has been made, it can often be useful to delay starting medication or making a referral at the first consultation and instead offer to review him in the next few days or week to see how he is. Just the fact of coming to see the GP, being listened to and taken seriously can be helpful, and the problem may be viewed in a different or better light on subsequent follow-up. In his case, it probably would be best to advise a non-pharmacological approach. Even if he were to take an antidepressant, the conditions triggering his depression are likely to be still there when he stops the medication. He could be referred for brief intervention counselling/therapy or CBT if he were in agreement, which can help to build resilience and prevent relapse. Mindfulness has also become very popular: it is a form of meditation and is recommended as an option for managing depression by National Institute for Health and Care Excellence (NICE).

Another way to help him could be to enable him to get back to some exercise as this is known to improve depression. When he presented at the pharmacy, he mentioned that he was unable to play football because of a knee injury. It sounds as though a return to exercise could help him deal with some of his stress. Some GP practices can refer to local leisure centres that support people with these kinds of problems. The term sometimes used for this kind of referral is 'social prescribing'. It might be that he could try swimming as another form of exercise. Perhaps referral to a physiotherapist might be useful.

The customer's view

It was useful to know more about whether *St John's wort* works or not. The pharmacist advised me to see the doctor and I followed this advice. I am glad that I did as the GP provided useful support and gave me helpful guidance. She helped me understand that I had a real illness and not to be embarrassed by my problems and to feel comfortable to return for regular review. I do not want to take drugs, which would include *St John's wort*, so I have been trying out mindfulness, which is helping me de-stress and relax. I have also taken up swimming and feel much more active with the bonus that physical tiredness helps me sleep.

Note: The Cochrane reviews and NICE guidelines do not have a date as they are often updated. The most up-to-date version should be consulted.

Section	**CKS (`https://cks.nice.org.uk`)**	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Insomnia	☑ ☑ Benzodiazepine and z-drug withdrawal	☑ Insomnia		• Drake, C., Roehrs, I, Shambroom, J. and Roth, T. (2013). Caffeine effects on sleep taken 0, 3, or 6 hours before going to bed. *J Clin Sleep Med* 9(11): 1195–1200. • Prescribing benzodiazepines in general practice. (2019). Br J Gen Pract 69 (680): 152–153. doi: `https://doi.org/10.3399/bjgp19X701753` (Accessed 23 February 2022) • Gould, R.L., Coulson, M.C., Patel, N. *et al.* (2014). Interventions for reducing benzodiazepine use in older people: meta-analysis of randomised controlled trials. *BJPsych* 204: 98–107. • Milne, S. and Elkins, M.R. (2016). Exercise as an alternative treatment for chronic insomnia (PEDro synthesis). *Br J Sports Med*. `https://bjsm.bmj.com/content/51/5/479` (Accessed 23 February 2022)
Suicidal thoughts				• *Source:* Rudd, M.D., Berman, A.L., Joiner, T.E., Jr. *et al.* (2006). Warning signs for suicide: theory, research, and clinical applications. *Suicide Life Threat.Behav* 36 (3): 255–262.

CHAPTER 12

Prevention of Heart Disease

PREVENTION OF HEART DISEASE

This chapter is different from the others in this book that are primarily concerned with responding to a symptom or problem. Here, the pharmacist is assessing risk and advising on prevention. Cardiovascular disease (CVD) develops largely asymptomatically up to the point where an 'event' (such as a heart attack or stroke) occurs. Pharmacists can suggest or make interventions ('primary prevention') to help people who may be largely symptom-free but are at increased risk of developing heart disease in the future. They may well have related comorbidity, such as hypertension, diabetes, dyslipidaemia or obesity; smoking is also a strong risk factor. Once a person has experienced an event and has an ongoing disease, the prevention of subsequent events is termed 'secondary prevention'. Community pharmacies are well recognised as centres for community public health and often offer relevant services, including smoking cessation, weight management and opportunistic case finding of hypertension. Increasingly, they are involved in national screening programmes to identify those at high risk of CVD.

WHAT IS CARDIOVASCULAR DISEASE?

Established 'atherothrombogenic' CVD is mainly subdivided into peripheral vascular disease, transient ischaemic attack (TIA) and stroke and coronary heart disease (CHD). This type of CVD occurs because of narrowing and/or blockage of

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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

the arteries from fatty deposits (atheroma) forming a 'plaque'. Impairment to blood flow in the coronary arteries can cause angina, and in the leg arteries, it causes claudication. An acute CVD event usually arises because the atheroma plaque ruptures and a blood clot forms over it (thrombus) – see Figure 12.1 – either causing sudden blockage of the artery, or part of the clot breaks off and causes blockage in the circulation elsewhere (emboli). This is the chief mechanism for acute myocardial infarction (MI), stroke and acute limb ischaemia.

Impaired coronary artery circulation remains asymptomatic until it manifests as angina, MI, sudden death or cardiac dysfunction (such as arrhythmias or cardiac failure). Other cardiac conditions, such as heart failure and atrial fibrillation, are also usually caused by CHD, resulting from damage to heart muscle and cardiac conduction.

How common is it?

Heart and circulatory diseases are a leading cause of morbidity and mortality in the United Kingdom (UK). In 2019, they caused more than 25% of all deaths or 168,000 (a similar proportion in both women and men). More than a half of all people will get circulatory disease in their lifetime.

CHD, MI and angina, is the most common type of atherothrombogenic CVD, and in 2019, it was responsible for nearly 63,000 deaths – 1 in 8 men and 1 in 15 women die from this. CHD kills twice as many women in the UK as breast

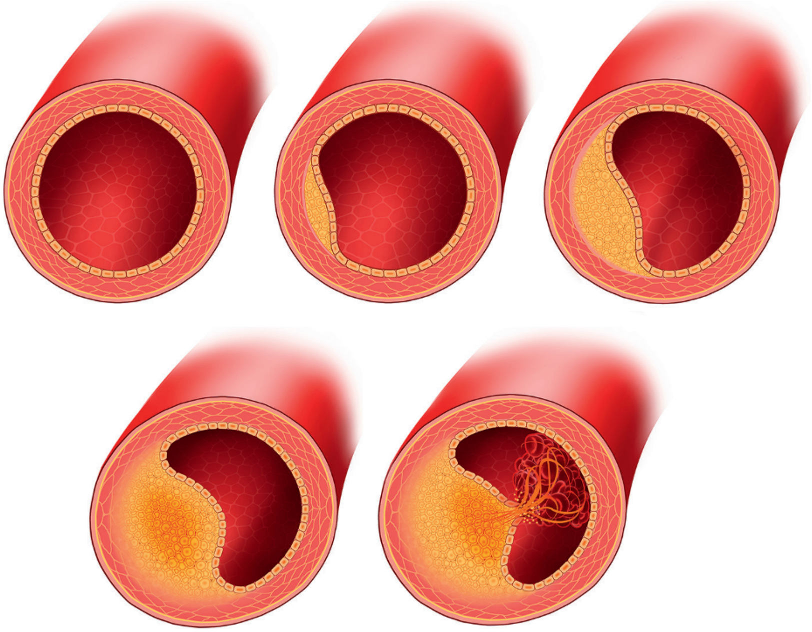

FIGURE 12.1 Process of atheroma build-up, rupture and thrombus formation.
Source: ilusmedical/Shutterstock.

cancer. It is a common cause of morbidity, and 2.3 million people are living with CHD in the UK, of which 60% are men.

Around 34,000 deaths were from stroke in 2019, with 6% and 8% of all deaths in men and women, respectively. There are over 1.3 million stroke or TIA survivors in the UK, and half of them are under 75 years of age. Stroke is the single biggest cause of severe disability in the UK.

A major concern is premature deaths from CVD (defined as deaths occurring before the age of 75 years). More than 46,000 people under the age of 75 years in the UK die from circulatory disease each year. These premature deaths are more common in men (women get the disease later in life); 25% of all premature deaths in men and 17% of all premature deaths in women are from CVD. There is a strong link to deprivation and where people live. People living in the north of England, Central Scotland and the south of Wales have the highest rates in the UK. The highest rates of premature CVD in the UK are seen in the cities of Glasgow, Blackpool, Inverclyde and Manchester (four times higher than for Rutland, where rates are the lowest).

Despite these stark figures, there has been a steady decline in the rates of death from CVD over the past 60 years (in 1961, more than 50% of all deaths were due to CVD). Much of this is thought to be due to reduced rates of smoking, improvements in diet and better lifestyles. Some are due to successful medical interventions, both in preventing CVD and also treating CVD when it arises. However, it is thought that premature CVD remains a largely preventable condition, and the variation seen in rates of premature disease and death suggests there is still much to be done, particularly in encouraging healthier lifestyles and in the field of primary prevention.

Screening and risk factors

A national programme of screening for CVD risk (National Health Service [NHS] Health Checks) was introduced in England in 2010 with the intention of screening all individuals aged between 40 and 74 years every 5 years. Community pharmacies have provided screening in some areas as part of local arrangements for several years and this became part of the pharmacy contract in England in 2021. Some similar initiatives are in place elsewhere in the UK.

An overall estimate of CVD risk over the next 10 years is calculated using an algorithm or risk calculator based on current clinical guidance; in 2015, the National Institute for Health and Care Excellence (NICE) recommended the use of QRISK2 for England and Wales. This was also advised for Northern Ireland.

QRISK is derived from a very large UK database extracted from general practitioner (GP) computer systems (EMIS), and is updated annually. For further information, and to see the latest version of the QRISK calculator, see `https://qrisk.org/three` (Accessed 23 February 2022).

In Scotland, ASSIGN is the preferred risk calculator, as it is tailored to the requirements of the Scottish population – see `http://www.assign-score.com/estimate-the-risk` (Accessed 23 February 2022).

The causes of CVD are multifactorial and are often termed ‘risk factors’ (see Figure 12.2). The estimation of individual CVD risk can be the starting point for discussions with patients, and a reduction in their risk should be the goal of interventions. Advice on smoking cessation and on exercise and improving diet is equally as important as medical intervention. Pharmacists are in a crucial position to assist with lifestyle advice.

What you need to know

Age, gender
Ethnic origin
Family history of CHD
Smoking history
Waist circumference/body mass index (BMI)
Diet
Physical activity
Alcohol intake
Hypertension
Diabetes
Lipids
Medication

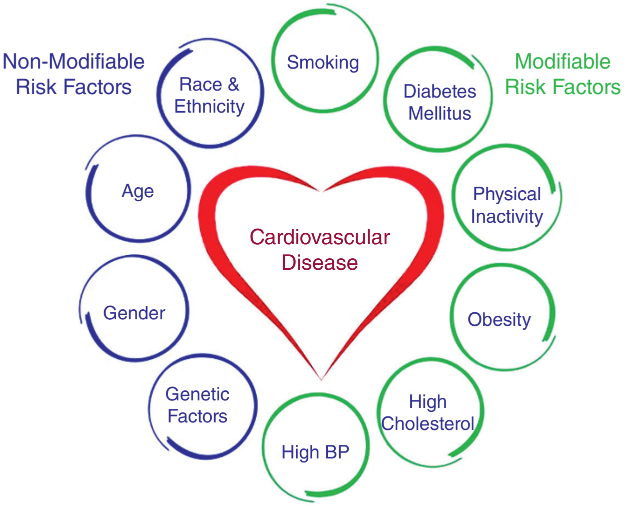
Non-Modifiable
Risk Factors
Race & Ethnicity
Smoking
Diabetes Mellitus
Modifiable
Risk Factors
Age
Cardiovascular Disease
Physical Inactivity
Gender
Obesity
Genetic Factors
High Cholesterol
High BP

FIGURE 12.2 CVD risk factors – non-modifiable and modifiable. *Source:* Dima/Alamy.

Significance of questions and answers

The overall CVD risk should be calculated. This is usually done by predicting the risk of a CVD event over the next 10 years using a risk calculator, such as QRISK, based on both modifiable and non-modifiable risk factors. Non-modifiable risk factors include age, gender, ethnic origin and family history of CHD (see Figure 12.2). Interventions to reduce absolute CVD risk are focused on modifiable risk factors.

Age and gender

With age, the risk of developing CVD increases. Interventions can slow down the accumulation of damage and disease. Around 80% of people who die from CVD are aged 65 years or over. Men develop it earlier in their lives, around 10–15 years earlier, but overall men and women have a similar risk over a lifetime.

Ethnic origin

Heart disease in the UK is more common in Afro-Caribbean people and those from the Asian subcontinent (Bangladesh, India, Pakistan and Sri Lanka). Type 2 diabetes is also more common in these people when they live in a 'Westernised' country.

Family history of CHD

Risk of developing CHD increases if an individual has a close relative (father, mother, brother or sister) with the disease. A family history of premature CHD (i.e. a father or brother who had a coronary event before the age of 55 years or a mother or sister before the age of 65 years) is an even stronger indicator of risk.

Smoking history

In 2019 in the UK, 15.9% of men were smokers compared with 12.5% of women (14.1% overall). Smoking tobacco has been shown to increase the risk of CHD. This effect is related to the number of cigarettes smoked; heavy smokers (more than 20 cigarettes per day) increase their risk of CHD by twofold to fourfold over non-smokers.

About a half of all smokers will eventually die of a smoking-related illness. It is not just about CVD risk, smoking is also a leading cause of preventable death from cancer in the UK. Between 2016 and 2018, 77,600 deaths were attributable to smoking per year in England. Estimates from the governments of the devolved countries suggest that smoking is responsible for over 5000 deaths each year in Wales, 10,000 deaths each year in Scotland and 2300 deaths each year in Northern Ireland. The main causes of premature death are cancer (particularly lung cancer), chronic obstructive pulmonary disease and vascular diseases. Smoking is the primary reason for the gap in a healthy life expectancy between rich and poor; among men, it is responsible for over half the excess risk of premature death between the social classes.

No level of smoking has been demonstrated to be safe. Those who have recently stopped smoking remain at a higher risk for as long as 5 years after stopping, but the risk begins to decline within a few months of stopping.

Waist circumference/body mass index

Obesity is associated with an increased risk of stroke, heart disease, type 2 diabetes, hypertension and dyslipidaemia. The latter is defined by raised total cholesterol (TC), raised low-density lipoprotein (LDL) cholesterol and raised triglyceride levels. Abdominal obesity (apple-shaped body) is particularly significant, and waist circumference may be a better predictor of susceptibility to both diabetes and CHD than BMI, especially in the Asian population. A waist circumference of more than 94 cm in men or 80 cm in women is associated with a relatively increased risk of CHD. Frequent fluctuations in weight are also associated with an increased risk of developing CHD.

To calculate BMI, divide an individual's weight (kilograms) by height (metres squared). Various online calculators are available, and these convert between metric and imperial units – for example, see: `www.nhs.uk/live-well/healthy-weight/bmi-calculator` (Accessed 23 February 2022).

Normal range:	BMI 18.5–25 kg/m^2.
Overweight:	BMI > 25 kg/m^2.
Obesity:	BMI > 30 kg/m^2.

Men in the UK increase their risk of CHD by 10% with every 1 kg/m^2 increase in BMI above 22 kg/m^2. Waist circumference greater than 94 cm in men and 80 cm in women identifies a CHD risk equivalent to that of a BMI > 25 kg/m^2. For a circumference greater than 102 cm in men and 88 cm in women, the risk is equivalent to that of a BMI > 30 kg/m^2.

In the Health Survey for England in 2019, around two thirds of adults were either overweight or obese (68% of men and 60% of women) and around 28% were obese (similar rates for men and women). Overweight and obesity increase with age and rates are growing rapidly in the UK. The percentage of adults who are obese in England has roughly doubled since 1993. Higher obesity rates are related to deprivation; for example, in Scotland, around 32% of adults living in the most deprived areas are obese, compared with 20% of those living in the least deprived areas.

Physical activity

Regular aerobic exercise has been proven to assist weight loss and reduce blood pressure. Physical inactivity is associated with an increased incidence of developing hypertension (a CHD risk factor) and is also a strong risk factor for type 2 diabetes. Current national guidance advises adults to do aerobic activities of at least 150 min of moderate intensity, or 75 min of vigorous intensity or a mix of moderate and vigorous intensities, combined with muscle strengthening exercises every week, to reduce cardiovascular risk and to help prevent diabetes. See more details under the heading 'Advice on physical activity', later in this chapter.

Alcohol intake

Drinking more than 21 units of alcohol per week is associated with an increase in blood pressure, which can be reversed if the intake is reduced. Alcohol can affect most parts of the body and, in addition to causing liver damage, can cause infertility, skin damage, heart damage, cancer and strokes. Many accidents, episodes of violence and risk-taking behaviour, e.g. unprotected sex, are associated with alcohol. Excess alcohol in those under the age of 20 years can damage the brain while it is still developing.

In 2016, the advisory maximum drinking limits were reset in the UK by the Chief Medical Officers (a change that was controversial, as it was regarded as unrealistic) down from 3–4 units per day for men and 2–3 units per day for women to 14 units per week for both men and women, spread over 3 days or more. They also advise several alcohol-free days each week.

For information on the number of units of alcohol in different drinks, see `www.nhs.uk/better-health/drink-less` (Accessed 23 February 2022).

Hypertension

Hypertension is persistently raised arterial blood pressure. The prevalence increases with age. Unless it is very high ('malignant hypertension'), it is not a disease, but one of the several risk factors for diseases such as CHD, stroke, heart failure and chronic kidney disease. An arbitrary threshold is set to describe 'high blood pressure' as greater than 140 mm Hg systolic or greater than 90 mm Hg diastolic when measured in 'the clinic'. In people at high risk of CVD, this is usually treated if it is persistently this high. Diagnosis in primary care can involve ambulatory blood pressure monitoring (ABPM) or home blood pressure monitoring (HBPM). The NICE hypertension guideline advises, 'Confirm diagnosis of hypertension in people with a: clinic blood pressure of 140/90 mm Hg or higher and ABPM daytime average or HBPM average of 135/85 mm Hg or higher'.

The threshold for hypertension, requiring treatment in most people (irrespective of CVD risk), is greater than 160 mm Hg systolic or 100 mm Hg diastolic.

Current estimates suggest that in the UK around 40% of all adult men and women have high blood pressure (>140/90) and 14% of the adult population are on blood pressure treatment. In addition, undertreated hypertension is common, with up to half of all people with diagnosed hypertension not reaching recommended targets.

Contributing factors to hypertension should be identified. These include diabetes, obesity, excessive alcohol intake (>3 units/day), high salt intake and physical inactivity.

Increasingly, pharmacists may be involved in measuring blood pressure in the pharmacy and will also advise patients on purchasing and using home blood pressure monitors. NICE advises that healthcare professionals receive training to measure blood pressure and that this training is regularly reviewed. Another important issue is to ensure that the devices used by patients are accurate. A list of devices validated for home use is provided at: `https://bihsoc.org/bp-monitors/for-home-use/` (accessed 23 February 2022).

Diabetes

Diabetes greatly increases the risks of hypertension and all types of CVD. It is also strongly associated with renal disease, limb amputation and blindness. People with diabetes are twice as likely to die of CVD than those without; CVD is responsible for 52% of deaths in type 2 diabetes and 44% in type 1 diabetes. About 20% of all hospital admissions for heart failure, MI and stroke in the UK are in people with diabetes. The good news is that improving dietary habits, managing weight, keeping active and using medication for high blood pressure, and statins for lipid modification, can significantly reduce these risks. Although taking drugs to control hyperglycaemia can reduce symptoms of type 2 diabetes, the evidence that they reduce CVD events is not clear-cut. Some evidence for this benefit has now emerged for newer drugs, such as sodium glucose cotransporter-2 (SGLT-2) inhibitors (e.g. *dapagliflozin*) and glucagon-like peptide (GLP-1) agonists (e.g. *liraglutide*).

People who are overweight or obese (especially central obesity) and/or have inactive lifestyles are at considerably increased risk of developing type 2 diabetes and obesity accounts for 80–85% of the overall risk of this condition. There is a strong correlation with waist circumference, and this is more marked in men with a waist circumference greater than 102 cm who are five times more likely to have diagnosed diabetes than those with a smaller waist circumference; women with waists greater than 88 cm are over three times more likely.

Family history is also important in the causation of type 2 diabetes, as it tends to cluster in families. People with a family history of type 2 diabetes are two to six times more likely to have diabetes than people without this family history. People from Asian, African and Black communities in the UK are two to four times more likely to develop type 2 diabetes than White people. This increased propensity for type 2 diabetes in these groups, in turn, increases the risks of CVD.

Type 1 diabetes (‘insulin-dependent’) accounts for less than 10% of all cases of diabetes and is caused by autoimmune destruction of the beta cells (which secrete insulin) in the pancreas. It can cause similar problems to type 2 diabetes with excess risks of CVD, renal disease and blindness. It is not associated with obesity, or inactivity, in the same way as type 2 diabetes.

Lipids

Many studies have clearly established that high cholesterol levels are associated with increased risk of developing CVD. CVD is caused when arteries become narrowed by a gradual build-up of atheroma within their walls. Atheroma develops when cholesterol is taken up by cells into the lining of the artery and a narrowing process begins. LDL cholesterol carried in the blood is responsible for this build-up and is synthesised in the liver following ingestion of fats. It is sometimes called 'bad cholesterol', but is difficult to measure. High-density lipoprotein (HDL) cholesterol transports cholesterol back to the liver and appears to protect against CVD and is sometimes called 'good cholesterol'. Total cholesterol (TC) (made up of LDL + HDL + some other fatty components – together known as lipids) and HDL cholesterol are relatively easily measured by blood tests, so the ratio of TC to HDL cholesterol is conveniently used as a measure of overall risk from lipids, in an individual, when using CVD risk calculators (such as QRISK).

To complicate matters, the effects of lipid-lowering drugs are nowadays usually monitored using 'non-HDL' cholesterol – TC – HDL cholesterol, rather than by estimating or measuring LDL cholesterol.

As a rule, the higher the TC level, the greater the risk to health. High levels of TC are normal in the UK population, and more than half of adults in the UK have a TC level above 5 mmol/L (this is sometimes described as 'abnormal', but in fact is the norm). It is thought that the population in the UK has a relatively unhealthy diet with too much saturated fat, and this contributes to relatively high levels of TC and associated CVD.

A word of caution is to consider hereditary abnormalities of lipid metabolism if cholesterol levels are very high, particularly when associated with a strong family history of premature CHD. A crude threshold is that this should be considered in all those whose TC is greater than 7.5 mmol/L, where familial hypercholesterolaemia is a possible diagnosis. Other combined 'dyslipidaemias' are seen where people have both a high TC and high levels of triglycerides.

Medication

A full medication history is important, as some medicines can affect CVD risk either positively or negatively. The potential contribution of over-the-counter (OTC) medicines should also be considered. Medications such as those that can cause dyslipidaemia (e.g. antipsychotic medication, corticosteroids or immunosuppressant drugs) increase CVD risk. Factors predisposing to cardiovascular toxicity include existing heart disease, uncorrected electrolyte abnormalities and poor renal function.

Sympathomimetic drugs, such as *adrenaline*, *noradrenaline*, *dobutamine*, *dopamine* and *phenylephrine*, can all cause elevation of blood pressure and can precipitate heart failure in susceptible people. Other commonly prescribed medicines with cardiovascular side effects include *thyroxine*, tricyclic antidepressants and 'triptans'.

Managing heart disease risk in the pharmacy

The main modifiable risk factors for CHD are generally accepted as smoking, cholesterol/lipid imbalance, hypertension, poor diet, obesity, excessive alcohol intake, physical inactivity, and inadequate diabetes control. A literature review has demonstrated the contribution community pharmacy-based services can make to the reduction of risk behaviours and risk factors for CHD. The evidence supports the wider provision of smoking cessation and lipid management through community pharmacies. Both primary and secondary prevention of CHD involve similar interventions.

SMOKING CESSATION AND NICOTINE REPLACEMENT THERAPY

Smoking cessation is an important focus for the NHS, and the UK now has a comprehensive smoking cessation service, including provision by community pharmacies in many areas. There are still around 10 million tobacco users in Great Britain, and the cost to the NHS in England of smoking-related illness was estimated at more than £2.5 billion per year in 2017.

Community pharmacies have the potential to reach and treat large numbers of people who use tobacco. They may be able to meet the needs of minority ethnic and disadvantaged groups and those who have difficulty accessing other community services. Pharmacies have an important role to play in local education and communication campaigns in tandem with local NHS Stop Smoking Services. They sell a range of nicotine replacement therapy (NRT) products and are often commissioned to provide an NHS Stop Smoking Service, which may include supply of NRT alongside behavioural support, and supply of *varenicline* or *bupropion* via patient group directions (or on NHS prescription if the pharmacist is qualified as a prescriber). Some patients with nicotine addiction who use e-cigarettes (ECs) may also get help in 'coming off them' from pharmacists.

Smokers who use NRT are about twice as likely to stop long-term smoking and up to six times more likely to succeed when NRT and behavioural support are combined. NICE guidelines recommend NRT, *bupropion* (prescription-only medicine [POM]) or *varenicline* (POM). NRT should not be used at the same time as *bupropion* or *varenicline*. *Varenicline* and *bupropion* should not be used together. Some patients do appear to benefit from using a combination of NRT products (e.g. both a patch and a mouth spray).

While helping the patient decide on a treatment, health professionals need to take into account the person's intention and motivation to quit and how likely it is they will follow the course of treatment. NHS supply is normally part of an abstinent-contingent treatment, in which the smoker makes a commitment to stop smoking on or before a particular date (target stop date).

It is important to recognise that many attempts to stop smoking fail, but that this should not dissuade people from further attempts, and these people are not 'failures'. It is estimated that over a third of smokers attempt to quit each year and that with support 19% of these people will have quit 1 year after taking steps to do so.

Smoking cessation: tips for customers about quitting

- Set a quit date, prepare for it and stick to it.
- Get support and advice from friends, family and health professionals.
- Make a list of reasons to quit.
- Consider NRT for the first few weeks.
- Avoid situations where you will find it difficult not to smoke.
- Change your routine to distract yourself from times and places you associate with smoking.
- Stop completely if you can, rather than cut down.
- Get rid of all cigarettes, lighters and ashtrays before your quit date.
- Ask people not to smoke around you and tell everyone you are quitting.
- Keep busy, especially when cravings start; exercise can act as a distraction.
- Reward yourself for not smoking.
- Calculate how much money you will save and plan how you will now spend it.

Useful advice and support materials are provided through:

'Quit Smoking' website in England (`www.nhs.uk/better-health/quit-smoking`). This also includes apps for smartphones.

Equivalent support is provided in Scotland (`www.nhsinform.scot/healthy-living/stopping-smoking`)

Wales (`www.helpmequit.wales`), and

Northern Ireland (`www.stopsmokingni.info`).

These signpost to local stop smoking services.

(Accessed 23 February 2022)

Nicotine replacement therapy: formulation options

A range of NRT products are available and vary in the ease and frequency of use, the speed of nicotine release and the nicotine dose. There are few conclusive studies to show that one formulation is any more effective than another at achieving cessation. All products appear to increase the chances of success if used correctly. Enabling choice to fit with the person's preference and lifestyle is important. Pharmacists are well placed to advise patients and some will prefer to purchase NRT rather than sign up for a Stop Smoking Service or get an NHS prescription.

Smokers should be advised not to smoke while using NRT products, although some chewing gums are licenced for smoking reduction – see 'reduce to quit' in the following text.

The main adverse effects are similar to overconsumption of cigarettes and include nausea, dizziness, flu-like symptoms, palpitations, dyspepsia, insomnia and vivid dreams.

Nicotine product formulations that can be provided by the NHS (or purchased) for smoking cessation

Patches

- Discreet – easy to wear and forget about.
- Continuous nicotine release – suitable for regular smokers.
- 16-hour patch (removed at night) – reduces insomnia.
- 24-hour patch – good for early morning cravings.
- Three strengths – allows a step-down reduction programme.
- Can cause skin irritation.
- Each brand has its own regime (follow instructions).

Chewing gum

- Flexible regimen – controls cravings as they occur.
- Various flavours – allows customer preference.
- Various strengths – allows step-down reduction programme.
- Chewed slowly – to release nicotine and then 'park' gum between cheek and gum.

Nasal spray

- Fast acting – helpful for highly dependent smokers.
- Usually advised to use twice an hour for 16 h.
- Local side effects (sore throat and rhinitis) – usually pass after first few days.
- Follow product instructions.

Oral spray

- Used when urge to smoke appears.
- Fast acting.
- Follow instructions on maximum use.

Sublingual tablet

- Discreet – placed under tongue and dissolves over 20 min.
- Dose variation – one or two (2-mg) tablets may be used per hour.
- Sublingual – sucking or chewing the tablet will reduce its effectiveness.

Inhalator

- Cigarette substitute – useful for smokers who miss hand-to-mouth action.
- Reduce usage over time – the recommended period is 12 weeks.

Lozenge

- Various strengths – allows step-down reduction programme.
- Highest strength (4 mg) – good for smokers who start within 30 min of waking.
- Sucked until taste is strong – lozenge then 'parked' between cheek and gum.

Licenced indications for OTC nicotine replacement therapy

NRT can be recommended for adults and children aged 12 years or over, for pregnant women and for those who are breastfeeding. The duration of treatment with NRT is usually 8–12 weeks (depending on which form of NRT is used and which dose is initiated), followed by a gradual reduction in dose. Higher-doses NRT may be more effective in people who are more highly dependent on cigarettes, and more dependent smokers may need to use NRT for longer.

Some NRT products are licenced to aid smoking reduction with the eventual aim of smoking cessation ('reduce to quit'). The smoker should attempt to quit when he or she is ready – but not later than 6 months after reducing the cigarette consumption. Young people (aged 12–18 years) should attempt to 'reduce to quit' only after consulting a healthcare professional.

Positive messages for prospective and new non-smokers

- Giving up smoking reduces the risk of developing smoking-related illness.
- Eight hours after quitting, nicotine and carbon monoxide levels in the blood are reduced by half and oxygen levels return to normal.
- After 24 h, carbon monoxide is eliminated.

- After 48 h, nicotine is eliminated.
- After 3 days, breathing becomes easier.
- After 2–12 weeks, circulation is improved and smokers' coughs start to get better.
- After 6 months, lung efficiency will have improved by 5–10%.
- After 5 years, the risk of having a heart attack is half of that of a smoker.
- After 10 years, the risk of heart attack is the same as that of a non-smoker.
- After 10–15 years, the risk of developing lung cancer is only slightly greater than that of a non-smoker.
- Research has shown that people who stop smoking before the age of 35 years survive about as well as lifelong non-smokers.

E-cigarettes containing nicotine (vapes, e-cigs)

ECs are sold by some pharmacies and are increasingly used by people who are trying to quit smoking. In 2019, the Office for National Statistics estimated there were 3 million users of vaping products in Great Britain and that the most common reason reported for using ECs was to help stop smoking tobacco (76% of current users). An EC is a device for inhaling nicotine in a vapour (hence vaping). They heat a liquid that contains nicotine and propylene glycol or vegetable glycerine (sometimes both) with a flavouring. Many electronic cigarettes, or ECs, are designed to look and feel like normal cigarettes. There are also some products that are quite different, and some come in flavours that provide an experience unlike that of smoking. There are concerns that ECs have not been regulated as medicines in the same way as other NRT products, although some licensed products are now available.

A 2021 Cochrane systematic review found moderate-certainty evidence that ECs with nicotine increase quit rates compared to NRT and that there was no clear evidence of harm within the 2-year time frame of the included studies. ECs cannot currently be prescribed or supplied by NHS Stop Smoking Services, but these services do provide behavioural support for people using them. Pharmacists can recommend that those people using ECs to quit smoking have this support to give themselves the best chance of quitting.

The long-term safety of electronic cigarettes is unknown, particularly if used recreationally, as this results in nicotine addiction and the 'flavours' or vapourised compounds inhaled may be potentially harmful. They do not produce tar or carbon monoxide and are generally regarded as safer than cigarettes, although long-term outcome data are needed to confirm this. In recent years, concerns have been raised over the quality of ECs and lack of regulations for their production. To resolve these concerns, new regulations were introduced in 2021, with the Medicines and

Healthcare products Regulatory Agency (MHRA) responsible for implementing them. Certain ingredients were banned, including colourings, caffeine and taurine, and there are new labelling requirements and warnings. E-liquids are restricted to a maximum nicotine strength of 20 mg/ml and EC tanks to a maximum of 2 ml of liquid.

Advice on physical activity

Physical inactivity is an important contributor to CVD. Cardiovascular benefits of regular physical activity include reduced blood pressure and less likelihood of obesity and diabetes. The Chief Medical Officers for the UK recommend that adults should do at least 150 min of moderate-intensity activity a week – e.g. five 30-min bouts a week. Something is better than nothing and doing just 10 min of exercise at a time is beneficial. Moderate-intensity activity is any activity that increases heart and breathing rates, such as brisk walking, cycling, recreational swimming or dancing. Alternatively, if preferred, advice is to do 75 min of vigorous-intensity activity a week or a combination of moderate and vigorous activities. During vigorous activity, breathing is very hard, the heart beats rapidly and it may be difficult to hold a conversation. Examples include running, most competitive sports or circuit training. Along with this, adults are advised to also do strength and balance training 2 days a week. This could be in the form of a gym workout, carrying shopping bags or doing an activity, such as yoga or Tai chi. It is also critical to break up sitting (sedentary) time by getting up and moving around.

Dietary advice

NICE advises that people at high risk of (a 10-year risk > 10%), or with established, CVD eat a diet in which total fat intake is 30% or less of total energy intake, saturated fats are 7% or less of total energy intake, intake of dietary cholesterol is less than 300 mg/day and where possible saturated fats are replaced by monounsaturated and polyunsaturated fats.

Translating this into guidance for patients is not easy. A brief summary that applies to all people for a healthy, balanced diet is as follows:

- Eat at least five portions of a variety of fruits and vegetables every day.
- Base meals on higher-fibre starchy foods, such as potatoes with skin, wholemeal bread, brown rice or wholemeal pasta.
- Have some dairy or dairy alternatives (such as soya drinks).
- Eat some beans, pulses, fish, eggs, meat and other protein.
- Choose unsaturated oils and spreads, and eat them in small amounts.

See `www.nhs.uk/live-well/eat-well/the-eatwell-guide` (Accessed 23 February 2022).

Dietary changes are important, but NICE advises people with a high risk of CVD not to take plant stanols or sterols with the intent to reduce CVD risk. Some foods are fortified with these, and they are also available in herbal supplements. Although these may reduce cholesterol levels, there is no clear evidence that they prevent disease events. People may wish to use them, as these will do little harm, but should not rely on them as 'a treatment'. They can be safely consumed alongside other drugs, such as statins. If the customer enjoys fried food, suggest choosing a vegetable oil high in polyunsaturates ('good fats'), such as sunflower or rapeseed oil.

Alongside this dietary advice, NICE recommends that a statin (usually high-dose *atorvastatin*) is prescribed to all those with CVD, and that a statin prescription is also offered to all those with high CVD risk (10-year risk > 10%), for the purpose of lowering cholesterol and reducing the chances of CVD events. At the time of writing, the NHS in England is reviewing the possibility of making statins available at community pharmacies through a 'Pharmacy Plus' category.

Weight management

Being obese increases the chance of CVD. This is in part because obese individuals are more likely to have high blood pressure, diabetes and dyslipidaemia (high cholesterol and triglycerides). Less fat, sugar and alcohol in the diet is necessary for weight control. In order to achieve a healthy body weight, it is also important to build regular, moderate exercise into a daily routine.

Pharmacy staff can give advice on a healthy diet that prevents weight gain and helps weight loss. Overweight people are prone to become obese. Rather than 'a diet', what really matters is long-term dietary change, and regular exercise, that will keep people healthy. Weight reduction at the outset may be required to kick-start this process. Customers whose BMI is greater than 25 kg/m^2 can be counselled on an appropriate plan.

A 3-month programme of weight reduction should aim for a 5–10-kg weight loss over 3 months or 0.5 kg per week (combining diet, exercise and behavioural strategies; see Table 12.1 for benefits of weight loss). In some areas, community pharmacies are commissioned to provide a weight management service.

The recommended calorie intake should be no more than 1400 kcal per day for most women and 1900 kcal per day for most men. People should be advised to moderate fat intake by eating less fatty meat, fatty cheese, full-cream milk, fried food, etc., and to reduce the amount of sugar. They should consider eating more vegetables, fruits, cereals, wholegrain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc. See: `https://www.nhs.uk/live-well/healthy-weight/start-the-nhs-weight-loss-plan/` (Accessed 23 February 2022).

TABLE 12.1 Benefits of 5–10-kg weight loss in those with obesity

Condition	Health benefit
Mortality	20–25% fall in overall mortality
	30–40% fall in diabetes-related deaths
	40–50% fall in obesity-related cancer deaths
Blood pressure	10 mm Hg fall in diastolic and systolic pressures
Diabetes	Up to 50% fall in fasting blood glucose
	Reduces risk of developing diabetes by over 50%
Lipids	Fall of 10% TC, 15% LDL and 30% triglycerides
	Increase of 8% HDL

OTC ORLISTAT

Orlistat 60 mg capsules can be purchased OTC by individuals aged 18 years and over with a BMI of 28 kg/m^2 or greater, to be used in conjunction with a reduced calorie diet that is low in fat, and with suitable exercise. It is intended to be taken three times daily with or after food. It is used to make the weight loss through diet and exercise more effective. *Orlistat* inhibits gastric lipases and causes less fat to be digested and absorbed and more to be excreted in the faeces.

Gastrointestinal (GI) adverse effects are common (e.g. oily spotting, abdominal discomfort, faecal urgency, fatty stools). These are usually reduced with continued use of *orlistat* and can often be reduced by limiting fat intake.

Orlistat reduces the absorption of fat-soluble vitamins. When it is supplied, a multivitamin supplement is advised at bedtime.

The amount of weight loss achieved with *orlistat* varies. In clinical trials, where the 120-mg dose was used with dietary change, patients lost 2.9 kg on average, compared with placebo and dietary change, over 1 year. After *orlistat* was stopped, a significant number of subjects regained weight. Importantly, people who took *orlistat* showed improvement in their blood pressure, cholesterol levels and their blood sugars. In a longer-term clinical trial, fewer people developed type 2 diabetes over 4 years. A Cochrane systematic review of the use of *orlistat* in people with hypertension found moderate-confidence evidence that *orlistat* reduces weight and blood pressure.

Orlistat is also available on NHS prescription at a higher dose (120 mg with meals, three times daily), and is usually only recommended where the person has made a significant effort to lose weight through diet, exercise or lifestyle change.

Patients taking OTC *orlistat* need to read the patient information leaflet carefully, as it contains essential information. This includes clear guidance on dietary restrictions and physical activity.

What you need to know

Age
BMI
Previous medical history
Medication
Current diet and physical activity

Significance of questions and answers

Age and body mass index

Those aged under 18 years cannot be treated with OTC *orlistat*. Requests for *orlistat* may be made by individuals who believe they need to lose weight but whose BMI is lower than 28, and pharmacy teams will need to handle these sensitively. It is important to be alert for the possibility of an eating disorder (such as anorexia).

Previous medical history

Kidney disease, or renal stones, is a contraindication to *orlistat*. Patients with hypothyroidism on thyroxine should be referred to the surgery if they wish to take *orlistat*, as it can reduce control of the condition. There is also an interaction with antiepileptic drugs, so people on these will need to be referred to their doctor.

Medication

Weight loss is likely to lead to improvements in metabolic control in diabetes, to reduced cholesterol and to lower blood pressure in hypertension. Treatments may need reviewing for these conditions.

Patients on *warfarin* or other oral anticoagulants should not be supplied with OTC *orlistat*. *Orlistat* may be prescribed by a doctor to those on these drugs with a requirement to monitor anticoagulant effects.

Patients on the combined oral contraceptive will need to use additional contraception if they develop severe diarrhoea while taking *orlistat*.

Current diet and physical activity

Patients need to adjust their diet so as to lose weight. They need to be on a low-fat diet. Exploring current fat intake and helping the patient to assess the extent of the change needed are essential. Regular physical activity is also a key to weight management, and the pharmacist needs to gauge the current amount of exercise taken.

Treatment timescale

If the patient has been unable to lose weight after 12 weeks of treatment, encourage them to come back to see you to discuss why that may be. They may wish to discuss further with the nurse or doctor at their GP surgery. Some surgeries have direct access to dietician support.

Management

OTC *orlistat* is taken at a dose of 60 mg three times daily immediately before, during or up to 1 h after meals. If a meal is missed or does not contain fat, *orlistat* should not be taken. While taking it, the patient's diet should be mildly hypocaloric and with approximately 30% of calories from fat (e.g. in a 1800 kcal/day diet, this equates to <60 g of fat). A low-fat diet will not only aid weight loss but also reduce GI side effects (see in the following text). The daily intake of fat should be spread throughout the day. A realistic target for weight loss is 0.5–1 kg (1–2 lb) a week for adults. Some pharmacists offer to monitor the patient's weight to help maintain motivation. Treatment can be continued for up to 6 months. If patients wish to continue beyond this time, they will need to attend their GP surgery where a prescription may be considered.

Contraindications

OTC *orlistat* should not be supplied if there is renal/kidney disease, thyroid disease or epilepsy. Patients with chronic malabsorption syndrome and those with cholestasis (bile flow from the liver is blocked) should also not take OTC *orlistat*. It is contraindicated in pregnancy and in women who are breastfeeding.

Side effects

The main side effects of *orlistat* are related to the GI system. Side effects are most severe when beginning therapy, and in trials they decrease in frequency with time, with nearly half of the side effects lasting less than a week, but some persisting for over 6 months. Because *orlistat's* main effect is to prevent dietary fat from being absorbed, the fat is excreted unchanged in the faeces and so the stool may become oily or loose (steatorrhoea). Increased flatulence is also common. Bowel movements may become frequent or urgent, and cases of faecal incontinence and anal leakage of oil can occur. To minimise these effects, foods with high fat content should be avoided and dietary fat intake carefully self-monitored. Taking drugs for diarrhoea (such as *loperamide*) will not control these symptoms.

It is important to have adopted the low-fat diet a few days before introducing *orlistat*. Oily stools and flatulence can be controlled by reducing the dietary fat content to somewhere in the region of 15 g per meal, and it has been suggested that the decrease in side effects over time may be associated with long-term acceptance and adoption of a low-fat diet.

Referral to the GP

The doses of some other medicines may need to be adjusted if the patient loses weight. Weight loss is likely to lead to improvements in metabolic control in diabetes, to changes in cholesterol levels and to lower blood pressure in hypertension. Doses of diabetic, cholesterol-lowering and antihypertensive medication may therefore need to be reviewed.

Other medicines where the patient needs to check with their GP before starting *orlistat* are *amiodarone*, *acarbose*, *ciclosporin* and *levothyroxine*. There is an increased risk of convulsions when *orlistat* is given with antiepileptics. Patients with renal/kidney disease should consult their GP before using *orlistat*.

Cautions

Absorption of fat-soluble vitamins (vitamins A, D, E and K and p-carotene) is inhibited by the use of *orlistat*. The manufacturers of OTC *orlistat* recommend taking a multivitamin supplement at bedtime.

There is no clinical evidence of a drug interaction between *orlistat* and oral contraceptives, but if a woman taking *orlistat* has severe diarrhoea, she should be advised to use an additional contraception method.

Aspirin 75 mg for secondary prevention of cardiovascular disease

Low-dose *aspirin* (75 mg) tablets may be sold as a P medicine in packs of up to 100 tablets for the secondary prevention of thrombotic strokes, TIAs (or ‘ministrokes’), heart attacks or unstable angina. These patients would normally get low-dose *aspirin* on prescription but some patients prefer to buy it.

It is important to be aware that low-dose *aspirin* is neither licenced nor recommended for primary prevention of vascular events and that the MHRA has cautioned against this use. NICE advises that people with type 2 diabetes without CVD should not be offered *aspirin* because clinical trials showed that the harms of *aspirin* (particularly GI bleeding) are greater than any benefit from preventing CVD events. There may still be people who ask about taking *aspirin* in this context and advice should be given on harm versus benefit.

There is also no evidence to support the use of *aspirin* in low-risk subjects, such as middle-aged males with no other risk factors. It is likely that potential harms will exceed potential benefit. Pharmacists should advise people purchasing low-dose *aspirin* in the absence of CVD accordingly.

When used in secondary prevention, patients with hypertension should have their blood pressure controlled to minimise the risk of *aspirin* contributing to the risk of cerebrovascular bleeding. Patients should be assessed for contraindications to *aspirin* therapy, and patients at increased risk of GI bleeding may require cover with a gastroprotective agent (usually a proton-pump inhibitor).

Preventing heart disease in practice

Case 1

A man who looks as if he is in his mid-fifties asks to speak to the pharmacist. He says, ‘I’ve been wondering if I should take the junior *aspirins*. A few of the lads at the snooker club are on them – and they say it can stop you having a heart attack’. He asks what you think and if it is true that the *aspirin* tablets can prevent heart attacks. He does not appear to be overweight.

The pharmacist’s view

I would first ask this man why he thinks he might need *aspirin*. That will give me an idea of if and how he has assessed his risk and it will be a good starting point. I would want to assess this man’s risk of heart disease by asking about his family history, smoking, diet, physical activity and medication (looking particularly for diabetes and hypertension). Then I would decide whether he should be referred to the GP for a formal risk assessment. If he were a smoker, I would prioritise that and discuss his readiness to quit. I would advise him that *aspirin* is no longer advised for people who have not had a heart attack or stroke, as recent research suggests that the risk of harm (such as from stomach bleeding) is likely to exceed the small benefits in preventing cardiovascular events.

The doctor’s view

I would agree with the pharmacist about considering his overall risk factors, his understanding of these factors and the areas he needs to work on. Low-dose *aspirin* is now only used for secondary CVD prevention. If he has not had a blood pressure or cholesterol test in the last year or so, then it would make sense for this to be done. Some pharmacies provide this service. In most GP surgeries, further assessment and information can be gleaned from seeing the practice nurse or clinical pharmacist. The most important aspect of advice is to cover all the risk factors and not just focus on one area. A follow-up review is often helpful to see how lifestyle has changed and what difficulties have been experienced. The community pharmacist could have a useful continuing role in supporting this person to improve his lifestyle, particularly with smoking cessation, if indicated.

Case 2

A woman in her forties comes in asking for some patches to help her give up cigarettes. The pharmacist finds out that she is a heavy smoker on 20–30 cigarettes per day and has smoked for 25 years. She knows that she is overweight and struggles to keep it down. She managed to stop smoking for about 3 months once but put on weight. She has a family history of diabetes and two of her grandparents died of a heart attack in their seventies. Her uncle who is 60 years old has angina. She saw her GP about 1 year ago who told her that her cholesterol level was mildly raised at six and her blood pressure was borderline. She was supposed to go back for a review, but has not done so yet.

The pharmacist's view

I would ask this woman to tell me about her previous attempt to quit, including whether she used the various NRT products that can be bought OTC or provided on the NHS. In many parts of the UK, pharmacies are part of local NHS Stop Smoking Services and can provide treatment at no cost to the patient. Many people are concerned that they will put on weight when they stop smoking and I would talk with her about this. The health benefits of stopping smoking far outweigh any additional risk from being overweight and discussing the figures can get this point across. Talking about what happened after she stopped smoking last time, including her diet and eating patterns, might provide some ideas about minimising weight gain this time. I would also gently encourage her to get her overdue review done at the surgery.

The doctor's view

It is very encouraging that she wants to do something about her smoking, especially as she has several risk factors for CVD. I think the pharmacist is in a good position to counsel and perhaps advise on appropriate NRT. It would be useful to ascertain how she managed to stop last time and the reasons for starting cigarettes again. The pharmacist is also well placed to offer advice about her weight and find out about her level of physical exercise.

It would be helpful, as suggested, to encourage a review at her GP surgery to follow up her blood pressure and cholesterol. It is likely that the nurse or doctor might want to do some blood tests: lipid profile, HbA$_1$C, electrolytes and renal function and liver profile. In addition, a urine test checking for proteinuria and glycosuria would be useful and, possibly, an electrocardiogram. If she remained hypertensive, these days usually detected by ABPM, medication may be advised. Of course, if she were able to lose weight and increase exercise, this would also help to lower her blood pressure.

Note: The Cochrane reviews and NICE guidelines do not have a date as they are often updated. The most up-to-date version should be consulted.

Prevention of heart disease	**CKS (`https://cks.nice.org.uk`)**	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
	☑ Smoking cessation ☑ Obesity ☑ CVD risk assessment and management	☑ Stop smoking treatments using e-cigarettes to stop smoking ☑ NHS health check ☑ Start losing weight	• Stop smoking interventions and services, NG92 • Obesity: identification, assessment and management, CG189 • Cardiovascular disease: risk assessment and reduction, including lipid modification, CG181 • Type 2 diabetes in adults: management, NG28	• British Heart Foundation (updated twice yearly). Heart statistics, `https://www.bhf.org.uk/what-we-do/our-research/heart-statistics` (Accessed 23 February 2022) • Health Survey for England. Obesity: `https://files.digital.nhs.uk/9D/4195D5/HSE19-Overweight-obesity-rep.pdf` (Accessed 23 February 2022) • Cochrane Review. Long-term effects of weight-reducing drugs in people with hypertension • Office for National Statistics. Adult smoking habits in the UK: 2019. `https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2019` (Accessed 23 February 2022) • Action on Smoking and Health. Action on smoking and health (ASH) fact sheets. `www.ash.org.uk` (Accessed 23 February 2022) • Cochrane Review: Electronic cigarettes for smoking cessation

CHAPTER 13

Malaria Prevention

Malaria is a serious illness caused by *Plasmodium* parasites transmitted through bites by the *Anopheles* mosquito. In a typical year, some 1500 cases of malaria are reported in the United Kingdom (UK) with up to 10 deaths. More than three-quarters of cases are due to *Plasmodium falciparum* and this species most likely causes severe disease or death. Eight out of 10 malarial infections occur in people who have visited friends or family in another country and the remainder are mainly in military staff and holiday travellers. Pharmacists and their teams are well placed to advise on malaria prevention measures, summarised as **ABCD**: **A**wareness of risk, **B**ite prevention, **C**hemoprophylaxis and **D**iagnosis (malaria is a medical emergency, so prompt diagnosis and treatment are critical).

Malaria chemoprophylaxis cannot be prescribed on the National Health Service (NHS) using an FP10 form and is only available ‘privately’. Some medicines, *chloroquine*, *proguanil*, *chloroquine and proguanil* combination packs and *atovaquone with proguanil* in a combination tablet are available to purchase over the counter (OTC) at a pharmacy. Others (*mefloquine*, *doxycycline*) can only be obtained on a prescription or, in some parts of the UK, on a patient group direction – and the drugs must be paid for. Private prescriptions are usually obtained from a Travel Clinic or from general practitioner (GP) practices. Chemoprophylaxis and measures to prevent mosquito bites significantly reduce but do not eliminate the risk of contracting malaria.

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.
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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

What you need to know

Age and weight
    Child or adult
Pregnancy and breastfeeding
Previous history
    Renal or liver impairment
    Immune system
Area[s] to be visited on this trip
Any current symptoms and travel to malaria-endemic areas within the last year
Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age and weight

This chapter focuses on the use of the combination preparation *atovaquone with proguanil* because resistance to *proguanil* as a sole treatment or with *chloroquine* is so widespread. There are combination packs of *chloroquine and proguanil* available OTC, but the regimen for these is complicated (different tablets are taken at different times and for different durations), and they are now rarely recommended, as they are largely ineffective against the most common type of malaria parasite, *P. falciparum*.

Individuals aged 18 years and over can be sold the *atovaquone–proguanil* combination preparation. Adults weighing less than 40 kg should not be offered OTC malaria chemoprophylaxis because safety and effectiveness have not been established in this group.

Atovaquone–proguanil chemoprophylaxis cannot be sold for use in children or adolescents, so they will need to be referred to obtain a (private) prescription. Some other antimalarial products can be supplied OTC to children, but either they are ineffective on their own or may require complicated regimens.

Pregnancy and breastfeeding

OTC malaria chemoprophylaxis cannot be recommended for women who are pregnant (or planning to become pregnant) or who are breastfeeding.

Previous history

Any patient requesting OTC *atovaquone* and with a history of the following conditions should be referred to their GP surgery for advice: renal or hepatic impairment, depression, epilepsy/seizures and tuberculosis.

Immune system

Those who have no spleen or whose splenic function is severely impaired are at a particular risk of severe malaria and, where possible, should avoid travel to malarious areas.

People who have previously lived in an area where malaria is endemic should not rely on immunity and still need chemoprophylaxis.

Areas to be visited on this trip

The patient should be asked which country or countries will be visited, and which different areas within the individual country or countries will be visited. The current recommendations for malaria chemoprophylaxis can be found at the Fit for Travel or National Travel Health Network and Centre websites. It is important to note that different areas within the same country to be visited can have different advice.

The risk of malaria may vary with the season, and recommendations should not be given more than 6–8 weeks in advance of travel. Therefore, the pharmacist needs to ask when the person is leaving and how long they are planning to be away.

Ask about the type[s] of accommodation that the patient will be staying in. Public Health England malaria prevention guidelines advise:

- That an impregnated bed net should be used unless the accommodation is fitted with functioning air conditioning and windows and doors that are sufficiently well sealed to prevent mosquito entry.
- Backpackers staying in cheap accommodation have a higher risk of being bitten compared to tourists staying in air-conditioned hotels.
- Travellers should make sure they are equipped with mosquito-protection measures appropriate to their particular circumstances.

Any current symptoms

Symptoms of malaria include headache, fever, chills, sweats, diarrhoea, generally feeling unwell, cough and aching muscles. Any traveller should be advised to seek medical advice if they experience such symptoms within 1 year of returning from an endemic area and particularly within the first 3 months.

Medication

Atovaquone–proguanil should not be recommended OTC to people who are taking the following medicines, because of the risk of drug interactions:

Interacting drug	**Effect of interaction**
Etoposide	Some evidence of increased plasma concentration of *etoposide* and its metabolite
Rifampicin or *rifabutin*	Reduces plasma concentration of *atovaquone* by 50% and 34%, respectively
Metoclopramide	Reduces plasma concentration of *atovaquone* by 50%
Warfarin or other coumarin-based oral anticoagulant*	*Proguanil* may potentiate the effect of *warfarin* and other coumarin-based anticoagulants that may lead to an increase in risk of haemorrhage
Direct oral anticoagulants – 'DOACs'	There is relatively limited experience of chemoprophylaxis in those travellers taking these drugs. Care is needed – seek guidance
Tetracycline	Associated with decreases in plasma concentration of *atovaquone*. Extent of any effect not established
Indinavir, *efavirenz*, *zidovudine* or boosted protease inhibitors	Potential increase in plasma concentration of *zidovudine*. *Efavirenz* and boosted protease inhibitors reduce plasma concentration of *atovaquone* by up to 75%

* *Warfarin* or other coumarin-based oral anticoagulant (e.g. *acenocoumarol* or *phenindione)*: Although the mechanism of the potential drug interaction with *proguanil* has not been established, caution is required when initiating or stopping malaria chemoprophylaxis in patients on continuous treatment with *warfarin* (or *acenocoumarol* or *phenindione*). The dose may need to be adjusted during use or after cessation based on international normalised ratio (INR) results. Travellers should ensure their INR is stable and within the therapeutic range prior to departure and they have adequate supplies of their anticoagulant for the whole trip.

When to refer

Adults weighing less than 40 kg, children and adolescents

Women who are pregnant or breastfeeding, or who are planning to become pregnant

Renal or hepatic disease

Depression

Epilepsy

Taking any of the medicines listed on the table provided in the earlier text

Travelling for long periods of time (needing >12 weeks' treatment)

Going to an area where alternative treatment may be needed

Atovaquone–proguanil

Combination tablets containing 250-mg *atovaquone* with 100-mg *proguanil* can be supplied OTC for use in adults weighing over 40 kg for chemoprophylaxis of *P. falciparum* malaria.

Treatment timescale

The dose is one tablet per day, starting 1–2 days before arriving at the malaria-endemic area, taken throughout the stay and for 7 days after leaving the area. The tablet should be taken with food or a milky drink and ideally at the same time each day. Dietary fat taken with *atovaquone* increases the rate and extent of absorption. The tablets should preferably not be crushed. Diarrhoea or vomiting may reduce the absorption of *atovaquone*, but are not associated with reduced efficacy in clinical trials. In the event of vomiting within 1 h of taking a tablet, a repeat dose should be taken. If vomiting occurs more than an hour after taking the tablet, a repeat dose is not necessary. No additional doses are required in diarrhoea.

The maximum duration of travel that can be covered by OTC treatment is 12 weeks (93 tablets). People requiring longer treatment should consult their GP or a Travel Clinic. The pharmacist is required to signpost the patient to a source of travel advice to ensure appropriate vaccination and any other needs are covered.

(*Continued*)

Days in malarial area	Total number of tablets	Pack size[s]
7	16	1 × 24
14	23	1 × 24
21	30	1 × 36
28	37	2 × 24
42	51	1 × 36 + 1 × 24
56	65	2 × 36
84	93	2 × 36 + 1 × 24

Side effects

In clinical trials of *atovaquone–proguanil* for chemoprophylaxis of malaria, the most commonly reported adverse reactions were headache, abdominal pain and diarrhoea. The manufacturer also reports that dizziness may affect up to 1 in 10 people and highlights this on the Patient Information Leaflet in the section about driving and using machinery.

The treatment cannot be recommended for patients with diagnosed renal or hepatic impairment of any severity.

Avoiding mosquito bites

General advice on avoiding mosquito bites is critically important in preventing malaria. People should cover up with clothing when practical and apply an insect repellent, such as N,N-diethyl-meta-toluamide or diethyltoluamide (*DEET*) to all exposed areas of the body, especially the feet, ankles and legs, while outdoors. It can also be applied to cotton clothing. Rooms should be sprayed with insecticides before sleeping to kill mosquitoes. Electrically heated devices that vaporise synthetic pyrethroid can be used each night to provide further protection. Beds should be covered with mosquito nets (preferably impregnated with insecticide). Keeping the room cool reduces mosquito activity.

Insect repellents

The Advisory Committee on Malaria Prevention (ACMP), an expert committee that formulates guidelines on malaria prevention in the UK, recommends a 50% *DEET*-based insect repellent as a first choice.

If *DEET* is not tolerated, is not available or the traveller prefers to use a different repellent, they should use the highest strength available of a preparation containing:

- *Icaridin* (e.g. *picaridin*), or
- *Citriodiol* (eucalyptus citriodora [EC] oil – hydrated, cyclised and sometimes called para-menthane-3,8-diol [PMD]), or
- *3-ethlyaminopropionate*

Pharmacists need to be familiar with duration of action of different percentages of *DEET* and other insect repellents in order to advise on frequency of application. You can highlight the length of action stated on the product packaging. Although the ACMP advises that long-acting formulations may increase the duration of effect, they say the evidence is not definitive. Therefore, they suggest that as a guide, users should reapply the repellent when the mosquitoes begin to 'take an interest', to ensure that they do not bite.

Particular attention to protecting the ankles, which the mosquito appears to prefer, is worth suggesting. One study found that spraying just the ankles with *DEET* gave a threefold reduction in the number of mosquito bites.

DEET

DEET can be used in a concentration of up to 50% and has a good safety record in children and pregnancy. Nursing mothers should wash repellents off their hands and breast skin prior to handling infants.

The stronger the preparation, the longer it lasts. There is no further increase in duration of protection beyond a concentration of 50%. Sweat-off time varies with activity. The interval between applications depends on this as well as the *DEET* formulation and concentration used. Repellent will therefore usually need to be reapplied on top of a sunscreen. When both sunscreen and *DEET* are required, *DEET* should be applied after the sunscreen. Sunscreen with SPF value 30–50 should be applied to compensate for *DEET*-induced reduction in SPF. Sunscreen is not required from dusk to dawn.

The range of available formulations of *DEET* (sprays, roll-ons, sticks, creams and wipes) means that most people can find a product that suits their preference. Cotton clothing (e.g. socks) can be sprayed with *DEET*; the duration of activity on clothing is shortened due to its volatility.

The ACMP provides the following guidance on use of *DEET*:

- *DEET* is suitable for all individuals over the age of 2 months (unless allergic).
- *DEET* (50%) has the longest duration of action and needs fewer applications per day, and is recommended first-line.

- There is no current evidence that any group (including pregnant women and small children) is at increased risk from using 50% *DEET*.
- Lower concentrations are available:
    - They need more frequent application and may not be as effective as 50%.
    - Care must be taken to reapply or use a higher-concentration *DEET* preparation if mosquito biting occurs after their use.
    - They are not suitable for individuals who may expect prolonged exposure, such as that encountered by backpackers and expedition travellers.
    - ACMP considers concentrations below 20% inappropriate.
- *DEET* applications can damage some plastic watch straps, watch 'glasses' and plastic jewellery; these items should not be allowed to come into contact with *DEET*.
- The user should ensure that repellents are not ingested or inhaled and do not come into contact with their eyes or mouth. Repellents should be used only on exposed areas of skin.

Icaridin (picaridin)

Icaridin is reported to have repellent properties similar to *DEET* with a comparable duration of protection when both are used at 20%. Travellers using *icaridin* should use a preparation of minimum strength 20%.

Citriodiol

Citriodiol (EC oil – hydrated and cyclised) provides protection for several hours.

3-ethlyaminopropionate

It has a shorter duration of action than *DEET*, but is effective.

Other insect repellents

There is no evidence to support the use of herbal remedies, homoeopathy, electronic buzzers, vitamin B1, garlic, yeast spreads, tea tree oil and bath oils in malaria prevention. Oil of citronella can no longer be marketed in Europe as an active ingredient for the prevention of mosquito bites. Citronella and some other volatile oils do possess some mosquito repellent property, but have not been shown to be reliable repellents.

PRACTICAL POINTS

1. Pharmacists and their teams can use a simple checklist to make sure all the relevant advice has been offered. The completed list can then be given to the traveller as a reminder of the bite prevention measures they need to implement.

Bite prevention: please tick measures advised
Insect repellent
Bed net
Electric vaporiser/coils
Insecticide spray

2. Advice for people travelling to an area with risk of malaria.

Advise people who are planning travel to an area where malaria is endemic:

That chemoprophylaxis and measures to prevent mosquito bites do not eliminate the risk of contracting malaria (although they significantly reduce it).

Who have previously lived in an area where malaria is endemic that any immunity to malaria that they may have previously had will have been lost within a few months of leaving. Ensure they understand that they are at increased risk of contracting malaria when they return to these areas if they do not use chemoprophylaxis.

Who do not have a spleen that if they contract malaria, they are much more likely to develop severe malaria than people with a spleen. Ensure they understand this risk before they decide to travel.

Who have other comorbidities, such as chronic renal, respiratory or heart disease, that they are at increased risk of harm if they contract malaria. Ensure they understand this risk before they decide to travel. The increased risk of harm depends on the severity of their comorbidity and occurs because:

Malaria may be more severe in people with chronic ill health.

Malaria may precipitate a deterioration in their chronic condition.

When to suspect malaria

Malaria presents:

Most commonly with fever and flu-like symptoms (general malaise, headache and myalgia), but may also present with diarrhoea, respiratory symptoms or jaundice.

Seven or more days after entering a malaria-endemic area (the incubation period).

Up to 1 year after leaving a malaria-endemic area (although malaria usually develops within 3 months of exposure).

What to do if malaria is suspected

They should seek medical attention as soon as possible; start emergency standby treatment (if carried) if they are unable to access medical facilities within 24 h.

CRUISES

All travellers on cruises should use insect-bite-avoidance measures. Prior to the COVID-19 pandemic, cruises were a growing part of the holiday market. Most travellers on cruises are only ashore during daylight hours when *Anopheles* bites rarely occur and therefore do not require malaria chemoprophylaxis. However, the cruise itinerary must be reviewed carefully to determine the risk of exposure to malaria. Normally, the cruise organisers will advise on such risks. Cruises that have an overnight stay in any malaria-endemic region of the world require malaria chemoprophylaxis.

USEFUL INFORMATION SOURCES

Advisory Committee on Malaria Prevention (ACMP). Guidelines for malaria prevention in travellers from the United Kingdom (regularly updated): `https://www.gov.uk/government/publications/malaria-prevention-guidelines-for-travellers-from-the-uk` (Accessed 23 February 2022)

CKS: Malaria prophylaxis (`https://cks.nice.org.uk/topics/malaria-prophylaxis`). (Accessed 23 February 2022)

NHS Health A–Z: Malaria Prevention. (`https://www.nhs.uk/conditions/malaria/prevention/`) (Accessed 23 February 2022)

	CKS (`https://cks.nice.org.uk`)	**NHS Health A–Z (`www.nhs.uk`)**	**NICE guideline (`www.nice.org.uk`)**	**Other resources/references**
Malaria prevention	☑ Malaria ☑ Malaria prophylaxis	☑ Malaria ☑ Malaria prevention		• Advisory Committee on Malaria Prevention (ACMP). Guidelines for malaria prevention in travellers from the United Kingdom (annually reissued, plus regular updates). `https://www.gov.uk/government/publications/malaria-prevention-guidelines-for-travellers-from-the-uk` (Accessed 23 February 2022) • Public Health England. Malaria: information for people travelling overseas. `https://www.gov.uk/government/publications/malaria-information-for-people-travelling-overseas` (Accessed 23 February 2022)

CHAPTER 14

Pharmacogenomics

PHARMACOGENOMICS IN THE PHARMACY

A number of DNA tests are now sold in the United Kingdom (UK), both online and in pharmacies, and give information on drug response based on pharmacogenomics (PGx). In their training, many pharmacists may not have learnt about PGx and this chapter introduces the subject to enable community pharmacists to gain a picture of the current state of knowledge as well as to respond to questions from customers and patients.

PGx can explain how the genetic makeup of individual patients may influence the effectiveness and safety of commonly used medicines. Examples are the variability in therapeutic effects of *codeine* and the variability in severity of adverse effects of *carbamazepine* and *allopurinol*.

PHARMACOLOGY AND GENETICS

We are all aware of how the age, weight, height and sex of a person may influence the choice and dose of medicines. We accept that checking liver function or renal function using blood tests has an important role in determining which drugs, and what doses, are safe to use in some patients, and in subsequent monitoring and dose titration. These features are often described as pharmacodynamic and pharmacokinetic factors. Understanding how the genetic makeup of individual

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Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

patients might affect their response to drugs (through their expression of pharmacodynamic or pharmacokinetic factors) is less complete. Genetic differences in response to drugs are described as pharmacogenetic and pharmacogenomic PGx factors; these two terms, although describing subtly different things, are often used interchangeably.

Many working in UK healthcare are grappling with how a personalised medicine approach, which involves PGx testing, can be integrated into prescribing and supply of medicines, and where this all fits in the National Health Service (NHS). PGx testing has been available from community pharmacies in USA, Canada and Australia for several years and UK consumers can now buy these. The crux of these developments will be in determining how useful PGx testing will be to enable clinical decision-making that improves outcome, and whether this will prove cost-effective. At present, the tests are expensive and alternative approaches should be considered (for example, would dose adjustment or switching drugs after no response to initial treatment be a cheaper option?). While use of these tests is currently limited in the UK, its future expansion seems inevitable.

WHAT IS PHARMACOGENOMICS?

This field of medicine has its own language, which can be confusing, alongside more common pharmacology terms. A short overview is helpful to clarify understanding. Box 14.1 lists relevant and commonly used terms with a brief explanation of each.

Box 14.1 Terminology

Pharmacokinetics is often simply described as ‘what the body does to the drug’. It includes the systems and rate at which drugs are absorbed and distributed around the body, and the systems and rate at which drugs are eliminated from the body by metabolism and excretion.

Pharmacodynamics is the study of ‘how the drug affects the body’. The mechanisms and this relationship can be influenced by factors such as age and disease, by the number and activity of drug receptors and by the presence of other drugs that may compete with the treatment (for example, by binding to the same receptor).

Pharmacogenetics is the study of genetic differences that affect an individual’s response to drugs. It was a word originally coined when the human genome had not been mapped and the precise detail about how genes affected drug response could not be fully determined (it was a term first used in 1959). In recent years, as our understanding has developed further, it has become a term that is used to focus on the influence of single genes on drug response.

Pharmacogenomics is perhaps a more comprehensive term that brings together pharmacology and genomics. It encompasses the finding that in some people, for some drugs, the way several genes may exert an effect can provide a better explanation of the variation in response to a drug and this knowledge can be used to help predict and tailor drug therapy. The wider array of genes is known as the genome and forms the individual genomic makeup of a person.

The human genome was first 'sequenced' in 2003. This described a complete set of gene sequences for a human, encoded as deoxyribonucleic acid (DNA). This process took 13 years to accomplish. Since then the technology has developed significantly, and whole human genome sequencing is now very rapid, taking 1–2 days.

Pharmacogene is any gene that determines how the body interacts with a drug.

Gene expression is the process by which information from a gene encoded in DNA is used in the synthesis of a functional gene product. These products are mostly proteins (though it can involve synthesis of RNA). The genes determine the exact structure of proteins, including receptors or enzymes, which can vary between individuals.

Genetic polymorphism describes how there may be variation in DNA sequences (and subsequent gene expression) between humans. There may be several versions of proteins, with slightly different activity as a result. This explains how drugs may behave differently within some individuals compared to others; for example, with differences in the metabolism or 'breakdown' of drugs.

Personalised medicine has been described as a move away from a 'one-drug-fits-all' approach to the treatment and care of patients with a particular condition, to one which uses the person's genetic information to target therapies to achieve the best outcomes in the management of their disease or predisposition to disease.

Precision medicine is very similar in meaning to personalised medicine (and these terms are often used interchangeably). It is a medical model that proposes the more precise targeting of healthcare, with medical decisions, treatments, practices or products being tailored to the individual patient's genetic makeup, instead of the 'one-drug-fits-all' approach. Some people prefer this term, as 'personalised' can be misinterpreted to imply that treatments and preventions are being developed uniquely for an individual.

Cancer immunotherapy is a distinct, separate area of precision medicine where the genetic expression of a mutated cancer cell line can be used to develop treatment with a targeted therapy. In cancer, there is excessive, uncontrolled proliferation of abnormal cancer cells to form tumours (or in the blood, to cause leukaemias). To treat cancers with immunotherapy, antibodies are synthesised which are directed at proteins or receptors on the cancer cell walls, or against enzymes, to disrupt or destroy the cancer. One of the earliest examples of cancer immunotherapy was *trastuzumab* (*Herceptin*®), an antibody developed to target the overexpression of the HER-2 receptor in some breast cancers (and subsequently used in some other cancers), a treatment which can result in tumour cell destruction.

COMMON SITUATIONS WHERE PHARMACOGENOMICS IS INVOLVED

An early example

One of the first disorders where genetic factors were found to affect drug metabolism is glucose-6-phosphate dehydrogenase (G6PD) deficiency. G6PD is an enzyme involved in carbohydrate metabolism and protects red blood cells from potentially harmful oxidative toxins. The disorder is genetically inherited in an X-linked recessive manner, with symptoms mainly occurring in males. A geographical distribution is notable, and it predominantly affects people from certain parts of Africa, Asia, and the Mediterranean, and people who have emigrated from these areas. Fava beans (broad beans) contain toxins which are readily broken down in people with the enzyme, but can cause severe haemolysis in those with relative deficiency of G6PD.

Certain drugs become 'toxic' if red blood cells are not protected from oxidation by G6PD: *primaquine*, *nitrofurantoin*, quinolones and some sulphonamides (such as *co-trimoxazole*) should be avoided in those with known G6PD deficiency, as their use may precipitate a haemolytic crisis, requiring blood transfusion. The effects of *aspirin*, *quinine*, *chloroquine*, *hydroxychloroquine*, and sulfonylureas are less severe, but they should still be used with caution. These drugs are flagged up in the British National Formulary (BNF). In several counties, G6PD deficiency is screened for by blood spot tests in newborn babies, but this is not done routinely in the UK. Patients known to have the condition (i.e. through screening in other countries or through medical investigations of their anaemia) should be advised to carry a warning card which lists the medications to be avoided.

CURRENT EXAMPLES OF DRUG RESPONSE EXPLAINED BY PGx

Codeine – anticipating variation in response

Pharmacists are well aware that some patients tolerate *codeine* very poorly and become nauseous on small doses, while others may fail to get pain relief at even high doses. *Codeine* is present in several over-the-counter (OTC) combination analgesic preparations as well as in prescription-only preparations. *Codeine* is an opioid prodrug which is converted to its active form, *morphine*, by the liver. The enzyme in the liver responsible for this metabolism is part of the CYP2D6 pathway of cytochrome P450 enzymes. There are many (over 100) genetic variants of CYP2D6, of which several result in ultrarapid, high activity and some in reduced or no enzyme activity.

Those with ultrarapid activity (1–2% of the population) tolerate the drug poorly, as they get a *morphine* 'overdose'. Furthermore, giving *codeine* to breastfeeding mothers with this variant may cause oversedation of babies due to *morphine* in breast milk, although this is very rare. Nonopioid analgesia or even, paradoxically, very-low-dose *morphine* may be a better, more predictable option for *codeine* ultra-metabolisers.

At the other extreme, in patients who are 'poor' or 'intermediate' metabolisers (as many as 5–10% of the population), the analgesic effects of *codeine* may be inadequate due to lower levels of active *morphine*. In these patients, *dihydrocodeine* may prove to be effective, or the use of low-dose *morphine* may be required.

This is useful in our understanding of the variation in response to *codeine*, but at present in the UK, there are no consensus guidelines on how to screen patients for CYP2D6 variants and it is mainly measured in the context of research. However, despite this lack of consensus, this testing is carried out in the commercial pharmacogenetic profiling kits purchased by patients online or in the pharmacy.

In the absence of guidance on how to use this information, prescribing is still based on experience of response when *codeine* is taken. Pharmacists may wish to make suggestions to prescribers for alternative analgesia where a conversation with a patient indicates lack of efficacy or heightened side effects.

Azathioprine – enzyme testing now advisable

A fairly recent development in the UK is the use of blood tests to determine the optimum dose of *azathioprine*, or whether to avoid it altogether (this also applies to the closely related drugs *mercaptopurine* and *tioguanine*). *Azathioprine* is a drug relatively commonly prescribed in ulcerative colitis, Crohn's disease, severe eczema, rheumatoid arthritis and some other autoimmune conditions. It is a 'prodrug' which is converted in the body into an active immunosuppressant. An enzyme thiopurine methyltransferase (TPMT) acts in a separate pathway in the breakdown of *azathioprine*, so less is available to be converted to the active form. The activity of the enzyme in individuals varies considerably according to a range of inherited genetic factors. This variation is an example of genetic polymorphism and explains why even small doses are highly toxic in some people with low levels of TPMT (the active immunosuppressant accumulates), while other people tolerate relatively high doses (*azathioprine* is readily broken down).

The main toxic effects of excess *azathioprine* activity are severe anaemia and myelosuppression (white blood cell counts can be dangerously low). This may present with things like a sore throat which pharmacists may see. TPMT polymorphism that results in relatively decreased enzyme activity affects approximately 5–10% in the general population who thus require lower doses. In up to 1 in 300 patients, TPMT is absent, so *azathioprine* should be avoided. Measuring TPMT activity using a blood test is therefore now recommended to identify these patients prior to commencing therapy, in order to achieve optimal therapeutic levels while minimising the risk of toxicity. The BNF gives recommended starting doses of *azathioprine* based on TPMT test results.

Warfarin – research continues

Another area where healthcare workers are aware of a wide range of response to different doses of treatment is with the anticoagulant *warfarin*. Some people require very low doses to achieve anticoagulation, other people need extremely high doses. Alongside several other factors, which include diet, there are two PGx explanations:

- *Warfarin* is metabolised mainly by the cytochrome P450 enzyme CYP2C9, which is strongly influenced by genetic variation in expression (genetic polymorphism affecting pharmacokinetics).
- Even with comparable plasma *warfarin* levels, some individuals show supersensitivity, and, conversely, some show resistance to the anticoagulant effects. This is because w*arfarin* acts by inhibiting vitamin K epoxide reductase complex 1 (VKORC1), which is also a polymorphic enzyme (affecting pharmacodynamics).

Initially, it was thought that combining tests for these two enzymes would provide a useful method to predict the appropriate dose of *warfarin* for most people, but so far research (including real-life use in hospital *warfarin* clinics) has not demonstrated benefit above and beyond careful initial dose titration (for example, using computerised decision support). The reason for this is thought to be that 60% variability in warfarin dose and response is due to other factors, many of which are nongenetic, so the additional benefits from testing may be marginal for many people.

Allopurinol and carbamazepine skin reactions – tests for those at highest risk

In certain ethnic groups, *allopurinol* is associated with a high prevalence of severe allergic reactions. These are described as severe cutaneous adverse reactions (SCAR), including drug reaction with eosinophilia and systemic symptoms (DRESS), toxic epidermal necrolysis (TEN), Stevens–Johnson syndrome (SJS) and *allopurinol* hypersensitivity syndrome (AHS). These are immune-mediated adverse drug reactions (ADRs), and it has been found by measuring certain human-leukocyte antigens (HLA), which vary in genetic expression from one person to another, that the immune cell response can be predicted.

In 2005, an association between HLA-B*5801 and increased risk of *allopurinol*-related SCAR in Han Chinese was identified and, subsequently, this association has also been observed in other ethnic populations. This genetic variant is most common in East Asian populations, including those of Han Chinese (13.3–20.4%), Korean (12.2%) and Thai (8.1%) descent, and is found much less frequently in those of Japanese (0.6%) and European descent (1.5–5.2%).

As these genetic factors are not modifiable, rapid tests to identify the presence of HLA-B*5801 are becoming available, which enable screening before commencing therapy with *allopurinol*. This is increasingly recommended before starting *allopurinol* in people of East Asia descent, although it is not yet standard practice in the UK.

A similar situation is seen with *carbamazepine* (and the closely related drugs, *oxcarbazepine* and *eslicarbazepine*) where another HLA-B marker, HLA-B*1502, can indicate significantly increased risk of severe allergic reactions. These are potentially life-threatening, skin-related adverse drug reactions, including SJS and TEN. These reactions are estimated to occur in one to six per 10,000 new users in countries with mainly Caucasian populations, but the risk in some Asian countries is estimated to be about 10 times higher.

Since 2008, the Medicines and Healthcare products Regulatory Agency (MHRA) has advised screening for HLA-B*1502 in patients of Han Chinese, Hong Kong Chinese and Thai origins before starting *carbamazepine* treatment (see BNF) and avoiding the drug if this is present. More recently, another genetic marker, HLA-A*3101, has been identified in Japanese people and individuals of European descent for serious *carbamazepine*-induced cutaneous adverse drug reactions such as SJS, TEN and DRESS, but as yet the MHRA says there are insufficient data supporting a recommendation for HLA-A*3101 screening before starting *carbamazepine* (or the chemically related medicines).

The future – pharmacogenomic profiling?

In the last few years, there has been increasing interest in PGx profiling. This is where a preemptive test is done to analyse an individual person's DNA to determine the likely response to drugs (including predicting ADRs) – a swab of cells from the mouth, inside the cheek, is the common tissue sample method. The intention is to use the profile to help choose drugs and doses that are most likely to give benefit and avoid potential harmful drugs.

In some countries such as in the USA, Canada and Australia, this testing has become commonplace and PGx screening kits can be purchased in the pharmacy (rather like DNA profile kits to determine people's ancestry). A number of these DNA tests are now sold in the UK, both online and in pharmacies, and give information on drug response. There has been a lot of interest in the potential for this 'preemptive' screening and there are now guidelines in some countries (such as USA and The Netherlands) to support the prescribing of more than 50 medicines where PGx biomarkers are predicted to be of clinical relevance.

Examples given alongside such guidelines:

- PGx tests can identify some people who are rapid metabolisers of *sertraline* where the drug is rendered relatively ineffective. The same genotype also predicts a sub-therapeutic response to *amitriptyline*, *citalopram*, *escitalopram*, *omeprazole* and *voriconazole*. This variation can be preempted and alternative drugs choices are recommended in the guidelines.
- Some patients can be identified as poor metabolisers of *paroxetine* using preemptive PGx tests. These patients experience intolerable side effects when treated with the drug. Alternative antidepressants are suggested.
- Some patients can be identified as ultrafast metabolisers of the proton-pump inhibitor *pantoprazole*. Use of an H2-receptor antagonist (such as *cimetidine*) is advised.

A note of caution is that considerable research is still required to understand the utility of using these approaches alongside a lot of interest in how pharmacists can best steer prescribers and patients in their choice of medicines based on these methods. Until the results of this research become known, this practice is unlikely to be commonplace in the NHS. An example of such research is the European Union funded programme, Ubiquitous Pharmacogenomics, which is running the PREPARE study (see the section 'Further reading and resources: websites').

ETHICS OF TESTING AND DATA PROTECTION

Use of PGx profiles has been criticised by those who argue that manufacturers and sellers overstate their usefulness and are making profit from their sales at a time when the clinical benefit is unclear. There is considerable potential, but apart from specific targeted testing (such as the *carbamazepine* example highlighted earlier), much research still needs to be done to prove the scientific validity of wider profiling. It could be argued that the value of these tests has not lived up to the initial promise; an example being hypertension where, although it is known that individuals may respond differently to various drug classes, doing genetic tests has as yet not shown much benefit in identifying responders versus non-responders and in improving clinical outcome.

Another issue relates to how individuals' DNA samples are used and who 'owns' them. This raises concerns about data protection, confidentiality, who may get access to the DNA results and how testing is regulated. Furthermore, these results may well convey more information than that just related to drug metabolism. An extreme example might be somebody who wishes to check parentage and gets hold of the information inappropriately in a search for biological proof. Another extreme example is finding genetic abnormalities that have major health implications but that are not amenable to therapy: how might the patient be informed and how might that affect their psychological well-being? In this instance, genetic counselling may be indicated.

CONCLUSION – PGx TESTING IN THE PHARMACY

There is increasing interest in the use of PGx testing in the pharmacy, but currently test results which can be used to alter clinical decision-making, and are clearly proven to improve clinical outcome, remain few. Nevertheless, consumers can now purchase a test from pharmacies and may ask their community pharmacist for their views on the value of testing or for help in acting on the results. Perhaps the most important role of the pharmacist at this current time is to advise on the place of PGx tests, their usefulness, suitability and limitations. PGx is an exciting, developing field of pharmacology and in the future precision medicine will be an ever more important aspect of prescribing.

REFERENCES

NHS England (2016). Report: Improving Outcomes Through Personalised Medicine. `https://www.england.nhs.uk/wp-content/uploads/2016/09/improving-outcomes-personalised-medicine.pdf` (Accessed 24 February 2022)

British Society for Haematology Guideline (2020). Laboratory diagnosis of G6PD deficiency.`https://onlinelibrary.wiley.com/doi/full/10.1111/bjh.16366` (Accessed 24 February 2022)

Shah, R.R. (2020). Genotype-guided warfarin therapy: Still of only questionable value two decades on. *J Clin Pharm Ther* 45: 547–560. `https://onlinelibrary.wiley.com/doi/full/10.1111/jcpt.13127` (Accessed 24 February 2022)

Stamp, L.K. and Barclay, M.L. (2018). How to prevent allopurinol hypersensitivity reactions? *Rheumatology* 57 (suppl. 1): i35–i41. `https://academic.oup.com/rheumatology/article/57/suppl_1/i35/4762105` (Accessed 24 February 2022)

Drug Safety Update (2014). Carbamazepine, oxcarbazepine and eslicarbazepine: potential risk of serious skin reactions. MHRA. `https://www.gov.uk/drug-safety-update/carbamazepine-oxcarbazepine-and-eslicarbazepine-potential-risk-of-serious-skin-reactions` (Accessed 24 February 2022)

Youssef, E., Mostafa, S. and Wright, D. (Jan 2020). Pharmacogenomic testing and its future in community pharmacy. *Pharm J.* `https://www.pharmaceutical-journal.com/cpd-and-learning/learning-article/pharmacogenomic-testing-and-its-future-in-community-pharmacy/20207342.article` (Accessed 24 February 2022)

Cunningham, P.M. and Chapman, A.B. (2019). The future of pharmacogenetics in the treatment of hypertension. *Pharmacogenomics* 20:3, 129–132. `https://www.futuremedicine.com/doi/full/10.2217/pgs-2018-0191` (Accessed 24 February 2022)

FURTHER READING AND RESOURCES

Personalised Prescribing: Using pharmacogenomics to improve patient outcomes. Report of a working party. UK Royal College of Physicians and British Pharmacological Society, 2022. This report considers the opportunities provided by increasing pharmacogenomic testing. It includes a set of recommendations for steps along the pathway to 'embedding' pharmacogenomics in the NHS. `www.rcplondon.ac.uk/projects/outputs/personalised-prescribing-using-pharmacogenomics-improve-patient-outcomes` (Accessed 27 April 2022)

Ubiquitous Pharmacogenomics (U-PGx): This programme pulls together scientific and clinical expertise in PGx in Europe. It is funded by an EU research grant. Research is underway (i.e. the PREPARE study) to explore preemptive pharmacogenomic approaches looking at clinical outcome and quality of life, and exploring economic advantages for healthcare systems. `http://upgx.eu/` (Accessed 24 February 2022)

PharmGKB is a National Institutes of Health (publicly)-funded resource in the USA that provides information on how human genetic variation affects response to medications. It collects, curates and disseminates knowledge about pharmacogenetics/genomics. `https://www.pharmgkb.org/` (Accessed 24 February 2022)

The Dutch Pharmacogenetics Working Group (DPWG) was established by the Royal Dutch Pharmacists Association and is funded by it. It is multidisciplinary and includes clinical pharmacists, physicians, clinical pharmacologists, clinical chemists, epidemiologists and toxicologists. `https://www.pharmgkb.org/page/dpwg` (Accessed 24 February 2022)

The Canadian Pharmacogenomics Network for Drug Safety (CPNDS) is a national programme that aims to reduce serious ADRs caused by genetic variation. It receives funding from various public health and research bodies in Canada. `https://cpnds.ubc.ca/` (Accessed 27 April 2022)

Appendix: Summary of Symptoms for Direct Referral

'Red flags': Alert signs and symptoms that suggest a serious underlying disease for urgent referral are discussed further and highlighted in the relevant chapters.

CHEST

Chest pain
Shortness of breath
Wheezing
Swollen ankles
Blood in sputum
Palpitations
Persistent cough
Whooping cough
Croup

GUT

Persistent loss of appetite
Difficulty in swallowing
Blood in vomit
Bloody diarrhoea
Vomiting with constipation
Pain on defaecation
Unintentional weight loss
Sustained alteration in bowel habit

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EYE

Painful red eye
Loss of vision
Disturbance of vision
Double vision

EAR

Pain
Discharge
Deafness
Irritation
Tinnitus
Vertigo

GENITOURINARY

Difficulty in passing urine
Blood in urine
Abdominal/loin/back pain with cystitis
Temperature with cystitis
Urethral discharge
Vaginal discharge
Vaginal bleeding in pregnancy

OTHERS

Neck stiffness/rigidity with pyrexia
Vomiting (persistent)
Non-blanching skin rash (purpura)
Allergic reaction with shortness of breath/faintness

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